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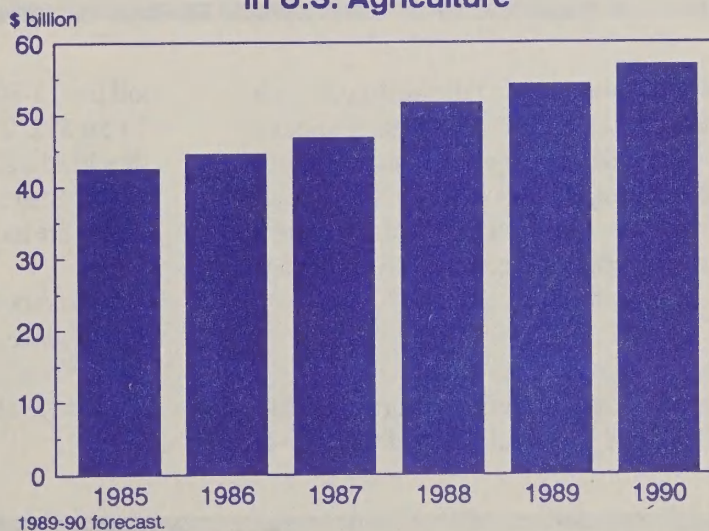
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Agricultural Income and Finance

Situation and Outlook

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Off-farm Income is Major Factor
in U.S. Agriculture



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Summary

Net cash income for 1990 is forecast at \$52 to \$57 billion compared with an estimated \$53 billion in 1989. Early forecasts show steady production expenses and climbing cash receipts.

Net farm income could fall 2 to 5 percent. The value of the change in inventory added \$5 billion to 1989 income, mainly because wheat and corn production were up sharply over 1988 and average annual prices were relatively high. The first forecast for 1990 has back-to-trend production and lower prices, so the inventory adjustment is projected at \$1 to \$3 billion. In constant (1982) dollars, net farm income may be down about 5 percent from 1989.

Crop receipts may increase 5 percent over the \$75 billion forecast for 1989. Food grain receipts may gain 15 percent. Wheat receipts could be up \$1 billion based on a projected 25- to 30-percent gain in production and a 25-cent drop (less than 10 percent) from the 1989 average price. Cash receipts for all feed grains and hay could grow 15 percent in 1990. Corn receipts may gain \$2 billion, with higher production levels in 1989 and 1990 supporting sales despite a 10- to 15-percent drop in the average price of corn during 1990.

Soybean cash receipts are expected to decline less than 10 percent following a 10- to 15-percent drop in 1989. The

annual price could average \$1.20 below 1989's, and production is expected to decline slightly. Sunflower, peanut, and cottonseed receipts show 5- to 10-percent growth for 1990.

Livestock cash receipts are forecast to stabilize in 1990 at about 1 percent below 1989's \$83 billion. Hog receipts are now showing a 2-percent gain for 1989 and could be up another 3 percent in 1990. Cattle and calf receipts are likely to be up about 1 percent in 1990. Broiler receipts will probably stay near \$8 billion, turkey receipts may climb 5 to 10 percent, and egg cash receipts could fall.

Production expenses are still expected to remain near 1989's level. Feed expenses could fall as much as \$3 billion and interest expenses could decline slightly, but manufactured input costs could rise from 3 to 5 percent.

Farm asset and equity values should go up 4 to 5 percent in 1990 but debt will increase only on the order of 1 percent. Farmland values rose some 7 percent in 1989 and should continue rising 4 to 7 percent in 1990. Overall, the financial position of farmers is stronger now than at any other time in the last several years. This is largely due to cautious investment behavior, effective cost control, increased cash financing, and continued restructuring and write-offs of outstanding debt.

Glossary of Terms in Farm Income and Finance

Net cash income—is the difference between cash receipts, farm related income, and direct Government payments and cash expenses. This cash-based concept measures the total income farmers receive in a given year, regardless of the year in which the marketed output was produced. It indicates the availability of funds to cover cash operating costs, finance capital investments and savings, service debts, maintain living standards, and pay taxes.

Net farm income—is the difference between gross farm income and total expenses. This accrual-based concept measures the profit or loss associated with a given year's production. Additions to inventories are treated as income. Nonmoney items such as depreciation, the consumption of farm-grown food, and the net imputed rental value of operator dwellings are included.

Net cash flow—is the sum of: gross cash income, the change in loans outstanding, net rent to nonoperator landlords, and the net change in farmers' currency and demand deposits; minus gross cash expenses and gross capital expenditures. This financial indicator measures cash available to farm operators and landlords in a given year. It indicates the ability to meet current obligations and provide for family living expenses, and to undertake investments.

Debt/asset ratio—measures both proportional owner equity in the farm and the financial risk exposure of

the operation (the extent to which the farm's assets have been borrowed against). It is calculated as total debt outstanding as of January 1, divided by the farmer's estimate of the current market value of owned assets of the farm business.

Equity level—measures net worth. It is the hypothetical balance that would remain from the sale of assets and paying off existing debt. It is calculated as total operator assets minus operator debt outstanding.

Current and inflation-adjusted dollars—In this report, dollar values of income, expense, asset, and debt items, unadjusted for the effects of inflation, are referred to as current or nominal dollars. Current or nominal figures, which indicate the purchasing power prevailing in the cited year, do not allow for fully accurate comparisons across time. To allow for meaningful comparisons across time, adjustments for the effects of inflation are made. Adjusted figures use a 1982 base and are interchangeably referred to as real, constant dollar, or inflation-adjusted.

Financial condition—A farm's financial condition is measured by jointly considering the net income position (net cash or net farm, positive or negative) and the amount of debt relative to assets (above or below 0.40). Farms with positive income and low debt are regarded as *favorable*, while those with negative income and low debt are considered in a *marginal income* position. Those with positive income and high debt are characterized as *marginal solvency* and those with both negative income and high debt are *vulnerable*.

Farm Income

1990 Outlook: Steady-state Farm Economy

The economic strength of the following factors suggests most farmers will make some financial progress in 1990:

- Record commodity receipts
- Continued strong livestock profits
- Low crop stockpiles and strong exports
- Stable farm expenses and incomes

The stability expected in the farm economy during 1990 will result from several factors that tend to offset each other: higher crop production but lower fall prices; higher crop expense but lower feed bills; and, higher total receipts but lower Government payments. Net cash income will be more than \$50 billion for the fourth consecutive year.

Figure 1

Farm Income

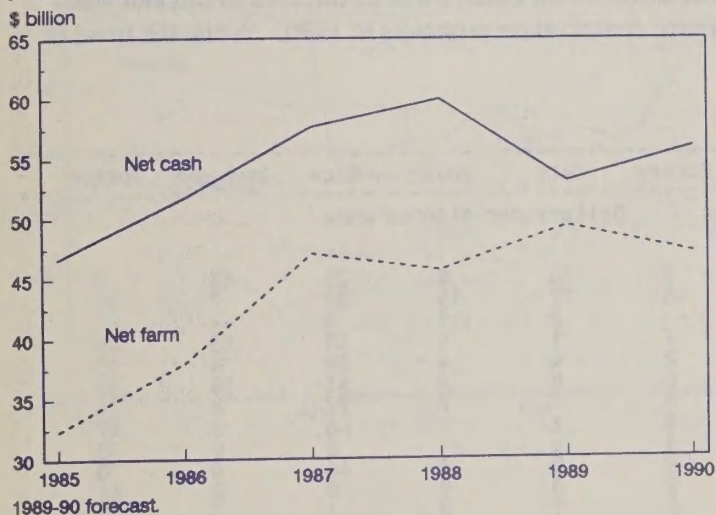
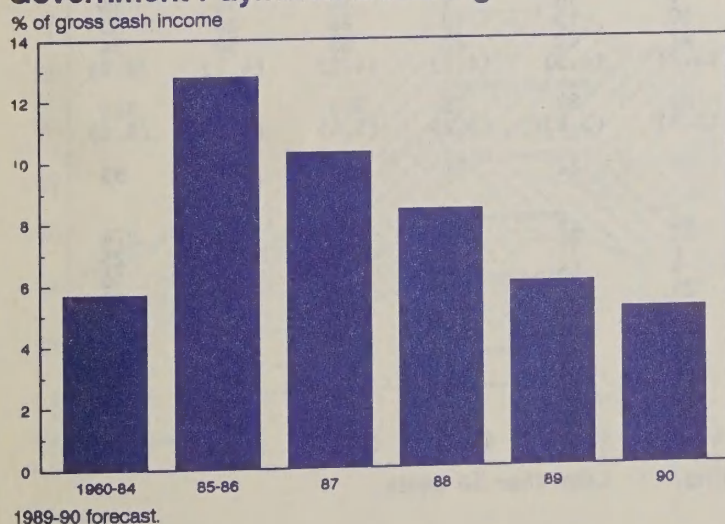


Figure 2

Government Payments Declining



Higher Production Leading to Record Crop Sales

Farmers may sell \$3 to \$4 billion (15 percent) more wheat and feed grains in 1990, which would bring the crop sector to a record level of cash receipts. Total crop production is forecast to be 20 to 25 percent above drought-affected 1988. At the same time, 5- to 10-percent lower crop prices and the chance of even weaker fall prices, if crop yields return to trend (e.g., corn yields above 120 bushels per acre), could hamper continued financial improvement in the farm sector. Soybean receipts show the impact of price weakness. Receipts in 1990 are likely to be \$2 to \$3 billion lower than 2 years ago due to a 25-percent drop in the average annual soybean price.

With very low stockpiles, cash receipts are likely to be up more than \$500 million for cotton and more than \$1 billion for wheat in 1990. Thirty-bushel-per-acre higher corn yields in 1989, and likely gains in productivity next year could result in nearly \$13-billion corn receipts in 1990. This is a 50-percent gain over 1987 cash receipts when corn prices averaged \$1.55 compared to the \$2.00 to \$2.25 projected for calendar 1990.

Commodity Sales Could Exceed \$160 Billion For First Time

The combination of record-high crop sales and record-tying livestock sales could raise total receipts to \$160 to \$163 billion in 1990. Net cash income is projected to rise to the mid \$50-billion range even though direct Government payments may decline \$1 to \$2 billion. Net farm income may be down 2 to 5 percent from 1989 because next fall's production is projected to be subject to some additional price weakness.

Cattle and Hogs: Key Livestock Profit Centers in 1990

Rebounding hog prices and 1- to 3-percent higher cattle prices will ensure that 1990 is another banner year for the livestock sector. Both cattle and hog sales could grow by \$250 to \$500 million, resulting in record red meat cash receipts of \$47 to \$48 billion. Livestock receipts are forecast to stabilize near the 1989 level of \$83 billion.

Poultry and dairy may become weaker profit centers, as dairy prices fall 7 to 9 percent, and poultry prices decline as much as 9 to 12 percent. Poultry production could expand 6 to 8 percent, keeping cash receipts stable. Due to lower prices, dairy sales could fall \$1 billion from 1989's record level.

Lower Feed Costs Keep Farm Expenses Level

One of the most positive trends in the financial outlook is the leveling off of farm expenses. A 15-percent projected decline in feed costs will offset 2- to 4-percent expense

increases in fertilizer, fuels, repairs, and depreciation. Interest expense is expected to stay near \$15 billion for the third consecutive year. Total cash expenses are forecast at \$119 to \$122 billion in 1990, about equal with \$121 billion in 1989.

Lower feed prices will increase the steer-corn ratio from 30 in 1989 to about 35 in 1990, and the hog-corn ratio from 18 to around 21. (The hog-corn and steer-corn ratio show how many bushels of corn are equivalent to the value of 100 pounds of hogs or cattle.) The combination of slightly higher meat prices and lower feed expense will make the red meat complex the major profit center in the 1990 agricultural economy.

At the enterprise level, costs-of-production (COP) forecasts are showing cash expenses up an average 2.9 to 3.6 percent for the major field crops (table 1). Corn expenses should rise the least from 1989 and average \$183 per planted acre. Cotton farmers will experience the greatest increase, with total cash expenses averaging \$349 per acre. Total economic costs, reflecting returns to both paid and unpaid factors of production, will probably rise from 3 to 4 percent, except for soybeans with a 1.4-percent increase. The net

return to land is one of the largest single expense items for farmers and is described in detail on page 11.

Direct Government Payments Could Fall 12 to 16 Percent

Direct payments to farmers could fall \$1 billion or more as disaster assistance declines from nearly \$3 billion in 1989 to less than \$1 billion in 1990. The trend to lower corn prices and to a smaller relative decline in wheat prices will result in about \$2 billion higher payments for these commodities. However, recent price strength will lower payments for cotton commodities by about \$1 billion in 1990. Thus the combination of lower cotton deficiency payments and overall disaster payments will more than offset higher wheat and feed grain deficiency payments during 1990.

Net Government outlays to farmers, including Commodity Credit Corporation (CCC) transactions, will comprise about six cents of every dollar of gross cash income next year. This is half the level of 1985, and about the same share as has occurred on average since the 1960's. Nearly 20 percent of net Government outlays will be directed to soil and water resource conservation programs in 1990. While the trend in

Table 1--U.S. production costs, 1990

	Corn	Sorghum	Barley	Oats	Wheat	Rice	Soybeans	Cotton
Dollars per planted acre								
Cash expenses:								
Seed	21	4	7	10	8	25	13	9
Fertilizer	46	18	16	12	15	39	7	28
Lime and gypsum	2	0	--	2	1	0	--	--
Chemicals	22	11	7	1	4	43	13	49
Custom operations	5	4	2	4	4	39	4	13
Fuel, lube, & electricity	12	12	8	8	9	53	10	32
Repairs	9	9	8	7	7	27	8	24
Hired labor	9	3	8	2	3	46	3	47
Purchased irrigation water	--	--	3	0	--	8	0	10
Drying	10	1	0	0	0	46	0	0
Ginning	0	0	0	0	0	0	0	61
Miscellaneous	0	0	0	1	0	1	0	0
Technical services	--	--	--	--	--	--	--	2
Total variable expenses	138	62	59	47	51	327	60	274
(% change from 1989)	(2.4)	(2.6)	(2.9)	(2.6)	(2.6)	(3.3)	(3.0)	(3.5)
General farm overhead	12	11	7	11	8	24	14	25
Taxes and insurance	17	10	9	16	9	14	16	16
Cash interest	16	15	10	15	10	26	20	33
Total fixed expenses	45	35	27	42	27	63	50	74
(% change from 1989)	(4.3)	(4.1)	(4.2)	(4.3)	(4.2)	(4.2)	(4.2)	(4.0)
Total cash expenses	183	97	86	89	78	390	110	349
(% change from 1989)	(2.9)	(3.1)	(3.3)	(3.4)	(3.2)	(3.4)	(3.5)	(3.6)
Capital replacement	33	26	25	22	22	50	37	59
Economic costs:								
Variable cash expenses	138	62	59	47	51	327	60	274
General farm overhead	12	11	7	11	8	24	14	25
Taxes and insurance	17	10	9	16	9	14	16	16
Capital replacement	33	26	25	22	22	50	37	59
Allocated returns:								
Return to operating capital	5	2	1	1	2	9	2	9
Return to nonland capital	7	6	6	6	5	12	8	13
Net return to land	54	32	31	21	34	52	52	79
Unpaid labor	25	12	13	14	7	27	12	25
Total economic costs	291	160	151	138	139	514	201	501
(% change from 1989)	(3.3)	(3.5)	(3.2)	(3.0)	(3.1)	(3.6)	(1.4)	(3.9)

Forecasts are as of 11/28/89. Totals may not add due to rounding. -- Less than 50 cents.

Figure 3

Prices Paid and Received by Farmers

% of 1977

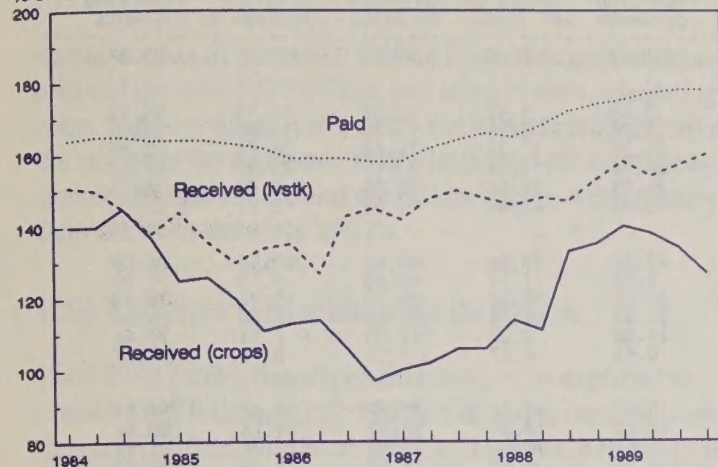


Figure 4

Prices Paid for Major Production Inputs

% of 1977

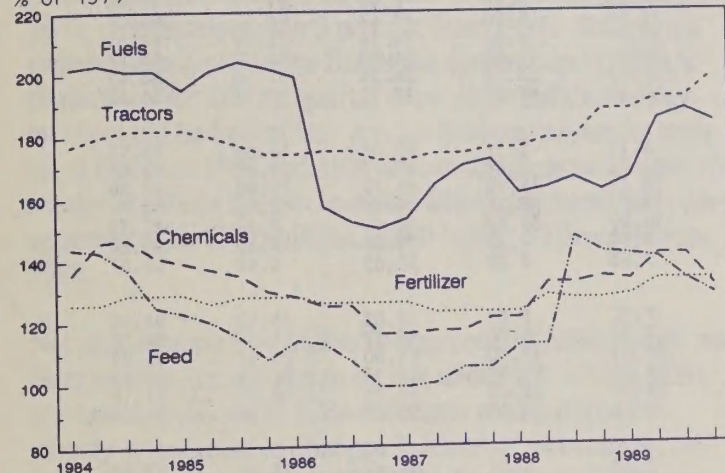
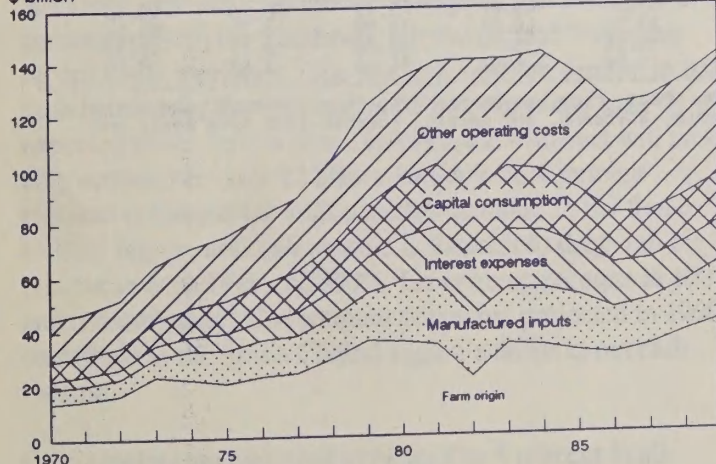


Figure 5

Farm Production Expenses

\$ billion



1989-90 forecast.

direct payments is down, Government supports continue to play an important stabilizing role in U.S. agriculture.

Farm Sector Not Problem Free

Several major economic problems continue to affect farmers:

- 68,000 commercial farms remain financially vulnerable with high debt and persisting cash flow difficulties.
- Crop profits may decline substantially for feed grain producers in 1990 if yields return to long-run trend and exports fail to grow further.
- Severe pressures to remain cost-competitive in crop export markets are likely to continue through the early 1990's.
- The farm sector remains critically dependent on Government price supports.

When surveyed in early 1989, approximately one of every 10 commercial farms faced some potential financial difficulty due to inadequate equity or cash flow. Should the farm economy weaken, the continued financial success of many of these operators would be jeopardized.

The two most serious present concerns are interrelated. First, the potential price weakness for cash grains, should weather conditions improve in 1990 and yields rise substantially, and second, relatively high farm program price support costs. A good signal that the farm sector has fully recovered from the mid-1980's downturn will be a better balance between supply and demand that results in lower deficiency payments, commensurate with 1990 being the fourth year of recovery in farm incomes.

Continuation of Farm Recovery?

Several factors are leading to the conclusion that the farm sector will continue to be stable throughout the early 1990's. Farmers have learned cost control. This is evidenced by a 42-percent decline in real debt, a 33-percent fall in real capital purchases, and a 20-percent decline in real expenses since 1982 when land values peaked. In contrast, farm income has been following a rising trend. Measured in constant dollars, 1990 real net farm income is expected to be about 50 percent higher than in 1982.

Buoyed by the cheaper U.S. dollar (down as much as 40 percent against major currencies since peaking in 1985), farm exports have risen by \$14 billion since 1986. The value of the dollar will probably not rise soon, because of concern over the large U.S. trade deficit.

Stockpiles of corn, wheat, and soybeans will be 4 to 5 billion bushels lower next summer than in mid-1987 (when stocks were very large). A rapid buildup of stocks is unlikely.

Table 2--Distribution and level of direct Government payments for farm programs in 1988

Item	Payments per reporting farm	Percent of total payments	Percent of major program commodity sales 1/	Payments as percent of gross cash income	Percent of all farms reporting payments	Percent of all farms	Pct. of farms reporting payments in class	Pct. total planted program eligible acreage 2/	Pct. eligible acreage on farms reporting payments
All farms	14,257	100.00	100.00	8.06	100.00	100.00	35.86	100.00	89.87
Economic class:									
\$500,000 or over	56,571	13.63	18.78	3.55	3.43	1.97	62.67	13.11	94.37
\$250,000 to \$499,999	35,599	20.61	24.53	8.95	8.26	3.98	74.39	19.25	95.18
\$100,000 to \$249,999	21,364	36.49	34.84	11.27	24.35	11.70	74.62	36.35	93.78
\$40,000 to \$99,999	10,917	19.33	15.25	11.23	25.24	14.04	64.47	20.29	87.67
\$10,000 to \$39,999	4,930	8.56	5.78	9.15	24.75	22.86	38.83	8.79	76.03
\$9,999 or less	1,410	1.38	0.82	3.83	13.96	45.44	11.02	2.21	28.16
Production specialty:									
Cash grain	18,700	56.79	67.08	19.97	43.30	19.26	80.62	59.50	94.09
Cotton	32,785	6.57	10.52	16.29	2.86	1.14	89.88	5.15	97.57
All other crop	8,274	6.01	7.77	2.63	10.35	18.22	20.37	5.00	81.19
Beef, hog, sheep	10,032	22.22	12.27	5.48	31.58	48.66	23.28	22.46	85.64
Dairy	10,423	8.04	2.08	3.44	11.00	8.05	49.00	7.54	70.46
All other livestock	5,779	0.37	0.27	0.79	0.92	4.67	7.04	0.36	74.07
Region:									
Northeast	7,410	1.85	1.38	2.12	3.56	7.17	17.79	2.63	57.14
Lake States	12,633	15.05	10.55	9.92	16.99	10.38	58.67	11.76	89.64
Corn Belt	15,158	31.27	33.97	12.84	29.41	18.84	56.00	29.24	91.59
Northern Plains	16,502	21.06	15.77	12.87	18.19	8.67	75.22	23.96	95.73
Appalachia	5,525	3.39	5.65	3.82	8.75	15.63	20.07	4.80	74.95
Southeast	6,946	2.30	4.66	2.92	4.72	8.31	20.40	2.43	84.14
Delta	21,458	5.46	8.98	10.72	3.63	5.76	22.60	5.88	90.25
Southern Plains	16,256	9.40	8.99	7.09	8.24	12.45	23.74	10.50	89.25
Mountain	21,158	6.39	4.77	6.33	4.31	5.47	28.25	5.70	89.66
Pacific	24,782	3.83	5.28	2.70	2.20	7.33	10.79	3.10	86.46
Acres operated:									
2,001 acres or more	40,895	19.59	19.94	8.96	6.83	3.46	70.90	21.59	95.98
1,001 to 2,000 acres	29,051	23.44	27.37	12.18	11.50	5.20	79.42	26.43	96.01
501 to 1,000 acres	20,278	28.98	29.49	11.34	20.37	9.85	74.14	26.09	92.31
251 to 500 acres	10,615	18.08	14.99	7.76	24.29	14.82	58.80	16.29	85.37
101 to 250 acres	4,693	8.14	6.66	4.75	24.73	23.13	38.34	7.50	68.43
100 acres or less	2,049	1.76	1.55	1.05	12.28	43.55	10.11	2.10	31.13
Net cash farm income:									
\$100,000 or more	42,888	18.39	26.20	4.64	6.11	3.37	65.06	16.69	93.58
\$40,000 to \$99,999	23,662	24.53	25.47	9.42	14.78	7.29	72.73	22.97	93.61
\$10,000 to \$39,999	12,976	25.71	22.53	10.12	28.25	15.90	63.72	25.96	91.39
\$1 to \$9,999	5,806	8.84	7.52	8.99	21.72	26.14	29.80	10.06	78.76
\$0 to -\$9,999	5,842	6.96	5.90	8.63	16.99	35.87	16.99	8.31	77.55
-\$10,000 to -\$39,999	14,350	9.18	6.92	12.60	9.12	9.33	35.06	9.58	91.24
-\$40,000 or less	30,049	6.39	5.47	8.30	3.03	2.10	51.65	6.44	92.07
Net worth:									
\$900,000 or more	36,327	19.67	22.27	5.60	7.72	5.32	52.03	18.10	91.48
\$600,000 to \$899,999	24,174	12.45	12.46	8.15	7.34	4.76	55.37	11.63	94.10
\$300,000 to \$599,999	16,530	25.29	25.95	9.23	21.81	15.10	51.80	25.57	91.95
\$75,000 to \$299,999	10,001	31.82	29.55	9.38	45.36	50.61	32.14	32.69	87.67
\$0 to \$74,999	7,072	7.59	6.76	8.87	15.29	22.62	24.25	8.75	81.18
Less than \$0	18,344	3.19	3.01	8.48	2.48	1.60	55.67	3.26	95.09
Return on equity:									
0.20 or over	25,411	13.01	20.01	5.24	7.30	4.81	54.45	13.26	92.60
0.10 to 0.19	20,194	12.44	14.21	8.55	8.78	5.79	54.44	11.70	93.07
0.05 to 0.09	14,737	13.39	12.07	8.80	12.96	12.30	37.78	11.55	94.32
-0.05 to 0.04	11,811	31.23	28.93	8.22	37.70	45.78	29.53	31.38	87.14
-0.10 to -0.06	12,184	8.57	6.62	10.00	10.03	9.63	37.37	8.65	89.46
-0.20 to -0.11	12,279	7.68	6.26	9.26	8.92	8.91	35.89	9.02	84.51
-0.21 or less	12,558	10.51	8.89	9.76	11.94	11.23	38.13	11.19	89.52
Insolvent farms	18,952	3.16	3.01	8.47	2.38	1.56	54.68	3.24	95.07
Financial position:									
Favorable	14,598	59.20	64.05	7.52	57.81	45.97	45.10	58.96	90.16
Marginal income	9,160	14.48	12.07	9.13	22.54	40.43	19.99	16.75	83.96
Marginal solvency	19,956	18.28	17.67	8.23	13.06	6.77	69.18	16.72	93.38
Vulnerable	17,401	8.04	6.21	11.19	6.59	6.82	34.63	7.57	93.00

1/ Includes cash sales and CCC loans for barley, corn, oats, sorghum, wheat, rice, soybeans, rye, flax, peanuts, and cotton.
 2/ Includes acreage planted for barley, corn, cotton, oats, rice, sorghum, soybeans, and wheat. Source: 1988 Farm Costs and Returns Survey.

Prices are more attuned to world markets and the Conservation Reserve Program is a stabilizing influence on production.

The alteration of economic factors that led to the financial crisis of the mid-1980's (high real interest rates, escalating costs, high exchange rates, increased export competition) set the stage for the economic revitalization of the farm economy in the late 1980's and will likely lead to a more stable farm sector in the early 1990's.

1989 Expense Projections Up \$2 Billion

Total 1989 production expenditures are now expected to exceed \$141 billion, up \$2.5 billion from previous estimates. Expenses of feed, fertilizer, fuels, and oils were raised to the top of their forecast ranges. Cash expenses show similar increases and are forecast to be over \$120 billion in 1989.

Cash receipts for 1989 are expected to total \$158 billion. Livestock receipts could be up almost \$4 billion (5 percent), while crop receipts gain 3 percent from 1988. Deficiency payments received in the first three quarters and USDA's projections for the last quarter show 1989 deficiency payments could be half of last year's. Disaster payments stemming from the 1988 and 1989 assistance programs could add nearly \$3 billion to cash income. Direct payments are now expected to be \$10.5 billion, down nearly 30 percent from 1988.

Net cash income for 1989 is forecast at \$53 billion while net farm income is expected to be just under \$50 billion. Census-based revisions of 1988 estimates maintain the previously-noted relative changes in income: net cash income down 6 to 7 percent from 1988's and net farm income up about 15 percent in 1989.

Income Prospects Vary by Region

Although total net cash income is expected to decline 5 to 10 percent in 1989, the Southeast, Northeast, and West may record slight increases. The nearly \$3-billion decline in net cash income for the Midwest is 75 percent of the total drop expected in the farm sector. In 1990, the Midwest will probably account for over \$2 billion of the 2- to 4-percent rebound projected for total net cash income. In the South Central region, net cash income is forecast to drop 5 to 10 percent in both 1989 and 1990. Lower crop receipts in 1989 and reduced direct Government payments projected in 1990 contribute to the South Central region's drops in net cash income.

Crop receipts are expected to be up 4 to 6 percent in all regions except the South Central in 1989. Growth in the Midwest can be attributed to a \$1.5-billion gain in wheat and corn receipts. In 1990, wheat and corn receipts are projected

Ag. Census Data To Raise Expenses 2 to 3 Percent and Land 12 Percent

Preliminary analyses of the statistics in the recently released U.S. volume of the 1987 Census of Agriculture indicate that agricultural production expenses for recent years will be subject to upward revisions. Expenses for 1987 and 1988 will likely be as much as \$3 billion higher than previously published estimates. Revisions of lesser amounts may be necessary back to 1983, the year following the preceding Census.

The likely effect on the bottom line could be to lower net cash income in 1987 and 1988 by about 4 to 6 percent from the upper \$50-billion range to the mid \$50's. Net farm income for these 2 years would likely drop about the same dollar amount but a little more on a percentage basis (6 to 7 percent). The U.S. farm income forecasts for 1989 and 1990 reflect this newly available information. The national income estimates for 1987 and 1988 published from this point forward will contain the best estimates available at the time of publication.

Where applicable, components of production expenses from the Census of Agriculture are used directly in the production expense accounts for farm income. But, ERS does not anticipate substantial changes to gross income. Cash receipts account for a large majority of gross income and are based on production, price, and marketing statistics from NASS. These NASS data are survey-based and are usually not subject to major revisions following an agricultural census.

The historical income accounts are estimated at the State level and revisions will be made as part of the next annual estimation cycle and released in August. The results of the Agricultural Economics and Land Ownership Survey (AELOS), which was a follow-on survey to the 1987 Census of Agriculture, are not yet available. The AELOS may contribute additional insight into the revisions to some expense components suggested by the Census results and will provide data on other components, particular real estate.

The first revisions for aggregate components of State income accounts will appear in the August issue of this publication. Revisions to the national estimates for earlier years and to the more disaggregated accounts for States will be published in the next scheduled releases of *Economic Indicators of the Farm Sector*.

to grow 15 to 20 percent and could push Midwest crop receipts up 6 to 8 percent.

Cotton and rice are major crops in the South Central region. Rice receipts were down about 15 percent nationwide in 1989, while cotton receipts were up slightly. The improved outlook for both rice and cotton in 1990 will probably boost crop receipts 6 to 8 percent in the South Central region. Lower soybean receipts offset by higher peanut and stable fruit and vegetable receipts could keep receipts for all crops near the 1989 level in the Southeast.

Figure 6

U.S. Regions



Livestock receipts are not expected to decline in any of the five regions in 1989. The Northeast may show a 10-percent increase based on comparable gains in poultry and dairy receipts. If poultry receipts stabilize and dairy receipts decline as expected in 1990, livestock cash receipts could dip 3 percent in the Northeast. Poultry receipts, a major source of total livestock receipts in the Southeast, may gain 6 percent in 1989 and probably be level in 1990. Steady red meat sales will keep total livestock receipts near 1989 levels in other regions.

Cash expenses were up in all regions in 1989. The sharpest increase was in the Northeast, where cash expenses rose over 10 percent. The Midwest and Southeast have 6- to 8-percent higher expenses, near the overall average, while the South Central and West may have 3- to 4-percent increases. During 1990, cash expenses are projected to fall more evenly (0 to 5 percent) across the five regions.

In the Midwest, direct Government payments could be up slightly in 1990, following a 40-percent drop in 1989. Average annual market prices of feed grains may be down 10 to 15 percent from 1989, and wheat production up 25 percent, along with lower set-aside requirements. Wheat and feed grain deficiency payments are projected to be above 1989 levels. A sharp drop in cotton deficiency payments received in 1990 underlies the 50-percent reduction of direct payments projected for the South Central region.

Table 3--Income components by region

Table 3-- Income components by region						
	Cash receipts		Government payments	Cash expenses	Gross cash income	Net cash income
	Crops	Livestock				
Billion dollars						
1987						
Northeast	3.5	6.4	0.3	6.6	10.5	3.9
Midwest	23.4	33.5	10.5	46.9	69.7	22.8
Southeast	10.8	11.1	1.2	14.8	24.1	9.4
South Central	6.7	11.8	2.7	15.4	22.3	6.9
West	19.3	12.9	2.1	23.8	35.4	11.6
1988						
Northeast	3.7	6.5	.2	6.9	10.7	3.9
Midwest	26.9	33.9	9.4	49.5	72.3	22.8
Southeast	12.1	11.6	.9	15.6	25.7	10.1
South Central	9.1	12.8	2.2	16.7	25.1	8.4
West	20.7	14.1	1.7	25.6	37.7	12.1
1989F						
Northeast	3.9	7.2	.2	7.8	11.7	3.9
Midwest	28.1	36.1	5.7	52.8	71.7	18.9
Southeast	12.7	12.2	.8	16.8	27.3	10.5
South Central	8.8	12.9	2.3	17.4	25.0	7.7
West	21.5	14.3	1.5	26.3	38.5	12.2
1990F						
Northeast	4.0	7.0	.2	7.5	11.5	4.0
Midwest	30.0	35.9	6.0	52.6	73.7	21.1
Southeast	12.8	12.2	.6	16.5	27.1	10.6
South Central	9.4	13.0	1.1	17.1	24.5	7.3
West	22.3	14.2	1.2	26.1	38.9	12.8

F = Forecast.

Land Costs in the Cost-of-Production Accounts

USDA estimates of costs of production for various agricultural commodities include both the farm operation's and the landlord's expenses. For example, seed expenses per acre or per bushel of wheat include what the farm operation pays for seed and, if the landlord contributes seed, what the landlord pays, as well. Therefore, the USDA cash expenses do not include a rental expense because all of the land is owned by either operations or landlords. USDA does include an expense for land in the economic cost section of the cost and returns statement. The purpose of the economic cost section is to include a cost for every production item, whether owned or rented.

Land, an important input in agriculture, is also the most difficult input for which to estimate a cost under the USDA system. In large part, this is so because it is a relatively "fixed" input, i.e., there is only a limited supply of land, even in the long run. When this is the case, the returns from production get capitalized into the value of an asset such as land. This means, for example, that the greater are the returns to a production process, such as corn production, the greater is the value of the fixed asset, corn land. When the value of land changes, the cost of using the land changes. A simultaneous relationship exists between the costs of production through land charges and the commodity price. This creates a special challenge because the goal of USDA is to estimate costs and returns in the absence of a major source of return to production—Government programs. The current estimation procedure only partially meets that goal.

The current procedure for estimating the opportunity cost, or returns to land, in the economic cost section is based on information about cash and share market rental rates. These two rental rates are weighted together based on the share of land rented in an area on a cash or share basis to yield one rental rate. This weighted rate, less real estate taxes which are already included in the taxes and insurance cost, is then applied to all acres in production—owned and rented.

The cash rental rate is the rental rate actually paid by producers as reported on the Farm Costs and Returns Survey. The share rental rate is a calculated rental rate based on the share of production producers agreed to provide landlords and the inputs landlords provided in the production process. Both of these statistics are collected on the Farm Costs and Returns Survey, as well. The share rental rate is calculated by first computing a gross share rental rate equal to the quantity of output provided to the landlord multiplied by the harvest month price for the commodity. (This harvest-month price is the same price which is used to value production in computing the total value of production in the returns section of the statement.) A net share rental rate is then calculated by

subtracting the value of the per-acre expenses covered by the landlord from the per-acre value of production that goes to the landlord. The landlord expenses for production inputs are included with the operation expenses for those items.

Government programs can have a profound impact on the rental market for farm land. Generally, landowners can receive payments directly from the Government when they lease their land on a share basis, but not on a cash basis. This is likely why we see more share renting for commodities under Government programs because payment limits are generally set per person, not per farm. Landowners of land enrolled in Government programs are generally more willing to accept a lower effective rental rate under a share agreement than under a cash agreement, since landowners will be receiving income under the Government programs for his or her share of the production. Similarly, producers are willing to pay more to rent land under a cash rental agreement because the producer may be entitled to receive Government payments on all of the production. In the absence of Government payments, however, we would expect share rental rates to be higher than cash rental rates because under share rental rates landowners must share in the risks of production.

Under share rental arrangements, as mentioned above, the share of production that goes to landlords is valued at a market price. The market price is often times less than the per-unit return for commodities under Government programs. This approach is consistent with USDA's goal of eliminating the effects of direct Government programs where possible. However, such an approach is possible under cash rental rates, and the composite rental rate used by USDA which is composed of both share and cash rates does include some effects of the Government programs. This practice of differential treatment of cash vs. share rent charges can mean that tenure practices in an area can inappropriately affect levels and differences in land returns. However, the more lucrative the participation in Government programs for a particular commodity, the greater is the tendency for landowners to rent on a share basis, thereby minimizing the effects of the cash rental rates.

USDA estimates of net land returns have not always been calculated as they are under the current approach. When the cost of production estimates were first mandated, the 1973 legislation specified that the Secretary of Agriculture should estimate a return to fixed assets equal to the existing interest rates charged by the Federal Land Bank. The 1981 Act deleted that specification. The 1981 Act also established a committee to review the procedures used by the USDA, the National Agricultural Cost of Production Standards Review Board. This committee recommended that USDA adopt the current market rental rate approach.

Farm Sector Balance Sheet

Agriculture's finances should continue to improve in 1990 as farm asset and equity values rise 4 to 5 percent from 1989 levels and farm debt rises by only 1 percent. In real terms, land markets and the farm sector balance sheet are reflecting a steady-state agricultural economy (table 4).¹

High returns to farm assets contributed to a 5-percent rise in farm real estate values in 1988. U.S. farmland values are expected to rise 7 percent in 1989 and another 4 to 7 percent in 1990 — about equal to the overall economy's rate of inflation. Farm debt (excluding operator households) dropped by \$4.7 billion in 1988 (over 3 percent) to \$138.4 billion — \$54 billion below its 1983 peak. Debt is expected to continue to decline more slowly in 1989 and then to rise slightly in 1990. The rate of debt reduction will depend on farmers' responses to high net cash income. Farm equity rose by \$50 billion in 1988 as asset values gained and farm debt fell. Farm equity is expected to rise to about \$713 billion in 1989, and could increase another \$30 to \$40 billion in 1990.

Farm Asset Growth Continues

The value of U.S. farm assets (excluding operator households) is forecast at \$849 billion on December 31, 1989, up 4.8 percent from 1988 and at \$880 to \$890 billion on December 31, 1990. Farm real estate assets increased by \$40 billion in 1989, and accounted for most of the growth in farm asset values. The projected 4- to 7-percent growth in land values in 1990 will vary considerably across the country. Stabilization of land values is essential for long-run farm financial progress.

Nonreal estate asset values in 1989 are expected to remain near 1988 levels, but are forecast to rise by about \$2 billion

to \$200 to \$205 billion in 1990. Increased 1989 livestock inventory values are expected to offset lower crop inventory values, which may fall about 16 percent to \$22 billion. The value of farm machinery and equipment is expected to rise by \$1 to \$2 billion in 1989. Increased sales and higher prices of new farm machinery will likely offset depreciation of the larger stock of machinery already on farms.

The anticipated 1-percent increase in nonreal estate asset values in 1990 is due to rising farm financial assets, higher values of farm machinery and equipment, and livestock and poultry values. Crop inventory values are forecast to drop by about \$1 billion in 1990 to \$19 to \$23 billion.

Moderate Increase in Farm Debt

Rising land values are reflecting the improving financial well-being of the sector and are also sending a signal to both lenders and borrowers of a lessening risk of using credit to finance agricultural operations. Lenders are becoming less concerned with potential losses due to eroding loan collateral values. While many producers have adequate cash reserves to finance operating expenses and purchases, expanding farmers may be less reluctant to incur a moderately increasing amount of debt to purchase land, while currently indebted farmers may seek to refinance existing short term debt over a more manageable longer term. As a result of these influences, farm borrowing will likely increase slightly in 1990, producing an anticipated \$1- to \$2-billion increase in total farm business debt. The \$1-billion decrease in total debt during 1989 is expected to mark the end of a 6-year trend in annual debt retirement.

Farm Credit System loans (through Federal Land Banks, Production Credit Associations, and consolidated Agricultural Credit Associations) should increase by about \$1 billion in 1990, marking the first annual increase in FCS loans outstanding since 1982.

¹ Estimates of total farm assets for 1987 and 1988 differ from those in ERS' *Economic Indicators of the Farm Sector: National Financial Summary* because they include the revisions in real estate assets based on the 1987 *Census of Agriculture*. Since revisions in real estate assets for 1983-1986 have not been completed, they are excluded from the balance sheet estimates in this issue.

Table 4--Balance sheet of the farming sector 1/

Year	Current dollars			Deflated dollars (\$1982) 2/		
	Assets	Liabilities	Equity	Assets	Liabilities	Equity
	Billion dollars					
1987	764.9	143.1	621.8	651.5	121.9	529.6
1988	810.4	138.4	672.0	668.1	114.1	554.0
1989F	849	136	713	670	108	563
1990F	880 to 890	134 to 140	740 to 750	668 to 678	101 to 107	563 to 573

F = Forecast. 1/ Excludes operator households and CCC commodity loans. 2/ Deflated by the GNP implicit price deflator, 1982 = 100.

Debt held by commercial banks is expected to increase about \$2 billion in 1990, as many rural banks, encouraged by an adequate supply of loanable funds and the anticipated emergence of the secondary mortgage market, are positioned to intensify farm lending activity.

- Banks currently hold over one-third of all farm debt, while the Farm Credit System holds approximately one fourth. This represents a reversal of 1984 market shares of these two lenders.

Farmers Home Administration debt levels could decline by as much as \$2 to \$4 billion during 1990, depending on the speed with which delinquent loans are restructured or written off.

- FmHA borrowers were delinquent more than \$8 billion on principal and interest as of September 30, 1989; almost \$6.6 billion of this is more than 4 years delinquent.

While the total farm debt held by life insurance companies is expected to be relatively stable through 1990, these farm mortgage lenders will continue to shift new loan origination emphasis away from the Midwest and toward the more diversified agricultures of the South and West.

- During 1988, life insurance company farm mortgages in the Corn Belt, Lake States, and Northern Plains decreased by \$338 million, a 1-year drop of almost 12 percent. Meanwhile, mortgage loans in California and Florida increased by \$168.3 million. While the rate of interregional mortgage transfer could slow in 1989 and 1990, this trend is expected to continue into the early 1990's.

Farm real estate debt may increase by about \$1 billion in 1990, spurred by increased lending to finance farmland sales. The continuing improvement in land values will both maintain the interest of nonoperator investors, and encourage financially sound farmers to expand their operations. As lender inventories of previous foreclosures have declined, there is reduced incentive for lenders to offer concessionary financing to move these properties. Though many 1990 sales will be for cash, farm real estate debt outstanding should increase by about \$1 billion.

Demand for nonreal estate loans should remain high during 1990, as relatively large planted acreages sustain high demand for most inputs, and farmers continue to replace an aging machinery capital stock. Farmers appear to have adequate cash reserves to finance much of this investment, however, and nonreal estate debt outstanding should increase by no more than \$500 million.

Equity Recovery Continues

Farm equity is expected to rise by about 6 percent in 1989 to \$713 billion. This would be the third year of increase following a 35-percent decline from 1980's peak. Farm equity is

projected to be \$740 to \$750 at the end of 1990, up about 1 percent in real 1982 dollars. Farm equity growth has been due to increased asset values and decreased amounts of debt used to finance operating expenses and purchases of land, and machinery and equipment. This equity strengthening is essential for long-term farm financial recovery.

Financial Ratios, Returns, and Cash Flow

U.S. farm sector liquidity, solvency, and profitability and financial efficiency ratios also reflect the overall improvement in the farm financial picture, especially compared to the early 1980's. Solvency ratios all indicated improvement in 1989, with farm liquidity and profitability ratios giving mixed results. In 1990, solvency ratios and liquidity ratios are expected to improve, profitability ratios to fall slightly, and farm financial efficiency ratios to give mixed results.

Farm Sector Returns

Adjustments in farm asset values, returns, and cash flow continue to support high rates of return to farm assets and equity. The rate of return on farm assets from current income fell to 4.5 percent in 1988, and the rate of return on equity fell to 3.2 percent. However, both are expected to rise somewhat in 1989 (4.7 and 3.5 percent, respectively) as returns to farm assets rise faster than farm asset and equity values. The total real rate of return on farm assets, including returns from current income and real capital gains, is expected to be 5.9 in 1989, and 4 to 5 percent in 1990 (table 5).

Returns to operators, and residual income to farm assets and to equity are expected to rise from 1988 levels (\$1982), but to fall slightly in 1990 (table 6).

The total-real-rates-of-return measures of profitability and the "spread" include the real capital gains component of total returns. The spread is the total real return on assets minus

Table 5--Rates of return on farm assets and equity 1/

Year	Returns to assets			Returns to equity		
	Income	Real capital gains	Total	Income	Real capital gains	Total
	Percent					
1987	5.2	7.1	12.3	4.0	10.2	14.2
1988	4.5	3.0	7.5	3.2	4.5	7.7
1989F	4.7	1.2	5.9	3.5	2.3	5.8
1990F	4 to 5	0 to 1	4 to 5	3 to 4	1 to 2	4 to 5

F = Forecast. 1/ Excludes operator households. Totals may not add due to rounding. Returns to assets and equity are calculated using the average of the current and previous year's assets and equity, respectively.

Table 6--Returns to assets and equity

Income and Returns	1987	1988	1989F	1990F
Billion 1982 dollars				
Gross farm income	146	146	151	139 to 147
Returns to operators	37	34	36	32 to 36
Residual income to farm assets	32	29	31	27 to 31
Residual income to equity	20	17	19	16 to 20

F = Forecast.

the real cost of debt. As the total real return on assets has been rising faster than the real cost of debt, the spread has been rising from negative values since 1984. The spread rose from -11.9 percent in 1986 to 1.0 percent in 1988. It is expected to be -0.2 percent in 1989 and -1.6 percent in 1990. This suggests that debt financing is becoming somewhat less profitable for the farm sector as a whole than in 1988. However, debt financing is still considerably more profitable than it was in the mid-1980's.

Cash Flow

Real cash flow after interest (\$1982) in 1988 was \$43.7 billion and is expected to be about \$39.3 billion in 1989 and \$32 to \$35 billion in 1990, up from the 1984-86 average of \$28 billion. Growth in real cash flow after interest since the mid-1980's reflects stable capital expenditures, lower interest expenses, and decreased net loan repayments (table 7).

Net cash flow in current dollars is expected to fall by over \$3 billion in 1989 and another \$5 to \$6 billion in 1990. Returns to farm assets in 1989 are expected to rise by over \$3 billion to nearly \$40 billion in 1989, and then fall \$1 to \$2 billion in 1990. The debt-to-net-cash-flow ratio is expected to rise

Table 7--Flow of funds to the farm sector, 1987-1990F

Income and Returns	1987	1988	1989F	1990F
Billion 1982 dollars				
Gross cash income	138	141	137	132 to 136
Plus: Change in loans outstanding	-10	-4	-2	0 to 2
Plus: Net rent to nonoperator landlords	6	6	6	5 to 7
Plus: Net change in farmers' currency and demand deposits	*	*	*	0 to -1
Minus: Gross cash expenses (excluding interest)	76	80	84	78 to 82
Minus: Capital expenditures	8	8	9	8 to 10
Equals: Cash flow before interest payments	49	56	49	42 to 46
Minus: Interest payments	13	12	11	10 to 12
Equals: Cash flow after interest payments	36	44	38	31 to 35

F = Forecast. * = less than \$0.5 billion. Numbers may not add due to rounding.

from 2.6 in 1988 to around 2.8 in 1989 and over 3 in 1990. The debt-to-returns-to-farm-assets ratio is expected to fall from 3.9 in 1988 to 3.5 in 1989 but rise to 3.7 in 1990.

Overall, the financial position of farmers is stronger than at any other time in the last several years. This is largely due to cautious investment behavior, effective cost control, increased cash financing, and continued restructuring and write-offs of outstanding debt.

General Economy

Interest rate activity, specifically Federal Reserve (Fed) actions on the Federal funds rate, over the last 6 months has been crucial in economic growth. The critical element in ensuring growth for the first half of 1990 will be falling interest rates.

The Fed has cautiously lowered interest rates, so as to avoid a resurgence of inflationary pressures, during the second half of 1989. Between May and July, the Federal funds rate dropped almost 60 basis points as the economy appeared to be on the edge of a recession. Between August and October, the Federal funds rate lost only 13 basis points. Continued weakness led some analysts to expect more significant reductions; during the first two weeks in November the Federal funds rate dropped to 8.44 percent, 45 basis points from the last week in October. Although the latest decline seems considerable, the rate has only receded to November 1988's 8.35 percent, and sits almost 2 percentage points above the low point of 6.6 in February 1988.

Inflation during the latter part of 1989 abated to more acceptable levels. Producer prices for finished goods rose slightly over 1 percent annually between June and October, much slower than the 8.0 percent annual rate between December 1988 and June. In addition, the underlying inflation rate, finished goods minus food and energy, of 2.7 percent from June to October improved considerably over the 4.3 percent annual rate of 1988. Overall, producer inflation averaged an annual 5.0 percent between December and October.

As Fed attention centered on the inflation rate, other economic activity began to falter. Industrial production between August and October dropped 4.1 percent on an annually averaged basis, attributable to a 5.8-percent decline in manufacturing. During the same period in 1988, industrial production growth averaged close to 5 percent. Nonfarm employment showed little growth in the manufacturing sector at the beginning of 1989 and actual job losses during September and October. In September, housing starts fell to the lowest level since the last recession.

Overall economic growth has been moderate, though, principally in response to the fall of the dollar in 1987. From the

fourth quarter 1988 to the third quarter of 1989, exports grew over 9 percent annually, while imports gained 6 percent annually. Business investment also contributed to growth, as nonresidential investment rose at an annual average 6.6 percent the first three quarters, compared to 8.3 percent between 1987 and 1988.

Real per capita disposable income increased by almost 4 percent on an annual basis between fourth quarter 1988 and third quarter 1989. Compared to 1987's 0.8-percent

increase, real per capita disposable income in 1989 should be slightly below the 3.4-percent rate achieved in 1988.

The outlook for continued growth hinges on additional Federal Reserve easing in the presence of lower inflation. Falling interest rates should revive the manufacturing sector, boost housing starts, and encourage business investment. Exports would also flourish, as lower interest rates ease pressure on the value of the dollar. With inflation moderating between 3.5 and 4 percent, real GNP growth of almost 3 percent is expected during the first 6 months of 1990.

Profitability of U.S. Dairy Farms

by
D.R. Bertelsen and B.F. Stanton²

Abstract: The average operating margin of U.S. dairy farms was about \$35,000 in 1987, according to USDA's Farm Costs and Returns Survey. In general, operating margins increased with farm size, but there was substantial variation within size groups. The smallest farms had average operating margins of less than \$6,000, and the largest farms averaged \$540,000. The source of feed played a major role in the farms' profitability.

Keywords: Profitability, dairy, Farm Costs and Returns Survey

The dairy industry is characterized by wide variations in herd size, milk production per cow, milk prices received, and costs of feed. Each of these can be a major factor in the profitability of the dairy farm. An examination of feed purchase costs found that the more feed produced on farms the higher operating margins.

The 1987 Farm Costs and Returns Survey (FCRS) was used to analyze the operating margins (gross cash farm income less total cash expenses) of specialized dairy farms. To qualify as a dairy farm, at least 50 percent of total commodity sales had to come from milk and other dairy products. Approximately 138,000 farms were specialized dairy farms and accounted for over 95 percent of total U.S. milk sales.

Dairy Farm Characteristics

The average specialized dairy farm had operator-controlled assets of slightly less than \$500,000 and debt of slightly more than \$100,000. The debt-to-asset ratio ranged from 0 to more than 1, averaging 0.21 at the end of 1987.

Milk sales averaged \$116,000 per farm and accounted for 82 percent of gross cash farm income. Sales of other commodities averaged \$18,000 and provided 13 percent of income, while other farm sources of income and direct Government payments together averaged \$7,000, 5 percent of cash income.

Purchased feed was the largest expense item, averaging \$35,000 (33 percent of total cash expenses). This was quite variable depending on the proportion of the total feed supply produced on the farm. On the largest farms, purchased feed was often 50 percent or more of cash expenses. Cash wages and benefits were the second most important costs, overall. Interest payments and crop costs (fertilizer, seed, and chemicals) ranked as the third and fourth most important components of cost. Labor, interest, and crop costs were each 8 to 12 percent of cash costs, but varied more than items like marketing costs or utilities and insurance. On the smallest farms, purchased feed averaged 24 percent of cash expenses.

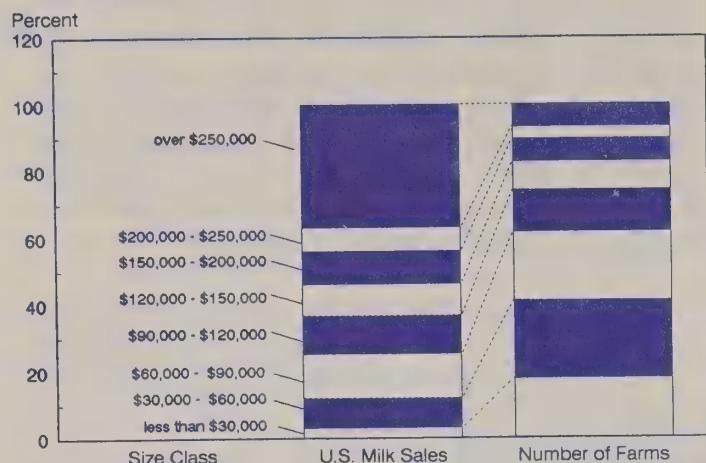
Sizes of Dairy Farms

Ten size classes were established on the basis of annual milk sales per farm. Farms with milk sales less than \$150,000 were grouped into five sales classes with ranges of \$30,000. More than 82 percent of the dairy farms had annual milk

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Figure A-1

Percent of Milk Sales and Number of Dairy Farms, by Size Class, 1987



sales of less than \$150,000. Farms with milk sales of \$150,000 to \$250,000 were grouped using intervals of \$50,000. The three largest classes were grouped \$250,00 to \$499,999, \$500,00 to \$999,999, and \$1 million and over. This classification was necessary to include important groups within the industry where change has been quite rapid in the last two decades.

Over 36 percent of the milk sold in 1987 was from relatively small farms with annual milk sales of \$120,000 or less (fig. A-1). This group represented nearly 75 percent of specialized dairy farms. Mid-sized farms with milk sales between \$120,000 and \$250,000 accounted for 26.5 percent of total milk sales and 19 percent of the specialized dairy farms. Large farms with milk sales of at least \$250,000 accounted for 37 percent of milk sales, but were less than 7 percent of all dairy farms.

Regional Differences

USDA commonly groups U.S. farms into 10 regions. Because some of these regions had relatively few specialized dairy farms, they were combined to form six regions (fig. A-2). Relative proportions of numbers of farms and milk sales indicate the regional differences in sizes of dairy operations. Dairy farms in the Northern Plains-Corn Belt region are generally smaller and combine more production of cash grains with the dairy enterprise than in other regions. The Appalachian, Southeast, and Delta regions were combined into one large, heterogeneous group, which included some of the smallest and largest dairy operations in the United States. Sizes of farms and sources of feed in the Southern Plains are quite similar to those in the Mountain States. More than half of the smallest dairy farms, with milk sales less than \$30,000, were in the Lake States. These primarily part-time dairy operations provided less than 3 percent of all milk sold in 1987. Operating margins averaged \$5,900 and off-farm income \$10,350.

Figure A-2

Specialized Dairy Farm Regions



Top Number: % of Farms

Bottom Number: % of U.S. Milk Sales

Most farms with sales of \$30,000 to \$60,000 were in the Lake States, where crop sales averaged 24 percent of gross cash income. In the Northern Plains-Corn Belt region, crop sales for this sales class provided 35 percent of cash income. Overall, operating margins were \$11,400 for this size class, with farms in the Lake States slightly above average at \$14,400.

Farms with milk sales from \$60,000 to \$90,000 are important nationally in terms of farm numbers (20.4 percent of dairy farms), and milk produced (13 percent of sales). In the Northeast, milk sales for this class accounted for nearly 90 percent of gross cash income, compared to 80 percent or less in the Lake States and Northern Plains-Corn Belt where more crops were grown. Regional average operating margins varied by about \$2,000 around the national average of \$26,200.

In the sales class from \$90,000 to \$120,000, the Northeast had much less nondairy cash income than in the Lake States and Northern Plains-Corn Belt. Total cash expenses were consistent across the three regions, but purchased feed was almost 30 percent of total cash expenses in the Northeast and less than 20 percent in the Lake States. Northeast farms had lower-than-average operating margins (\$23,200 compared to \$34,500), while the Lake States region was about \$10,000 above average.

In the \$120,000-\$150,000 sales class, crop sales provided at least 25 percent of cash income on average in the Lake States and Northern Plains-Corn Belt, but less than 15 percent in the Northeast. Average expenditures for fertilizer, seed and chemicals in the Northeast were half of the average in the Northern Plains-Corn Belt. The overall operating margin for this class was \$46,500, with the Northeast averaging \$13,000 less than the other regions.

The average operating margin for farms with milk sales of \$150,000 to \$200,000 was over \$70,000 in the Northeast and Lake States and less than \$40,000 in the Southeast-Delta-Appalachia region and the Mountain-Southern Plains region. Purchased feed was 25 percent or less of cash expenses in the regions with the higher operating margins and over 35 percent in the regions with lower averages.

In the \$200,000 to \$250,000 size class, average operating margins ranged from \$100,000 in the Lake States to \$45,000 in the Mountain-Southern Plains. The Lake States had a number of farms with important cash crop enterprises and purchased feed averaged less than 17 percent of cash expenses.

Farms in the \$250,000 to \$500,000 sales category produced more than 14 percent of the national milk supply. Feed purchases averaged 32 percent of cash expenses, with considerable variation in the importance of crop production. In the Lake States, feed purchases were less than 20 percent of expenses. Home-grown feed was less common in the Pacific region where feed purchases made up 48 percent of total cash expenses. The average operating margins across regions were in reasonable agreement with the national average (\$100,500) for this size class. The Lake States and the Southeast averaged over \$110,000, while the Pacific, Northeast, Mountain-Southern Plains had somewhat lower average margins of less than \$90,000.

Dairy farms with annual sales of from \$500,000 to \$1 million were quite specialized operations with milk sales accounting for 85 to 90 percent of gross cash income. Feed and labor were by far the two biggest components of cash expense. The average operating margins for the Northeast and the Mountain-Southern Plains regions were \$30,000 and \$40,000 less than the national average of \$142,000. More than half of these large dairy farms were in the Pacific region where operating margins averaged \$138,300. While milk sales and gross cash income were at least double those for the \$250,000 to \$500,000 size class, average operating margins did not increase proportionately.

The largest dairy farms with milk sales of \$1 million or more provided nearly 16 percent of the total U.S. milk supply. Most of these farms were in the West and bought nearly all of their feed. Feed purchases were 40 to 60 percent of cash expenses. There was considerable variability among these operations but most had over 90 percent of gross cash income from milk sales. Average operating margins in the Mountain-Southern Plains region of \$345,000 were somewhat below the average \$540,000 of the Pacific region. Part of this may be attributed to higher interest and marketing costs in the Mountain States.

To summarize performance of different sized farms, analysts compared average operating margins as percentages of gross cash income. For a large number of the small, full-time dairy farms (\$60,000 to \$200,000 annual milk sales), this ratio was quite steady, averaging between 27 and 29 percent (table A-1). The ratio declined modestly for the next two sizes (\$200,000 to \$500,000). The lowest average percentage (17 percent) was for the farms with sales of \$500,000 to \$1 million; it rose modestly for the largest farms, to 20 percent. The regional averages across all sales classes ranged from 18 percent in the Southeast-Delta-Appalachia region to 30 percent in the Lake States. Among the sales classes, however, there was a much wider range of from 11 percent to 38 percent. For all but three size classes, the Lakes States region had the highest value.

Profitability and Feed Purchase

The cost of purchased feed had an important influence on average operating margins for dairy farms of all sizes and in all regions. Farms with crop enterprises usually had higher gross cash income and more expense for fertilizer, seed, and chemicals. Within each size class, dairy farms were grouped according to the cost of purchased feed relative to milk sales using four intervals: feed purchase less than 20 percent of milk sales, 20 to 29 percent, 30 to 39 percent, and 40 percent or more.

At the U.S. level for farms with \$30,000 to \$500,000 in sales, operating margins averaged highest when the feed purchase ratio was less than 20 percent (fig. A-3). For the \$500,000 to \$1 million sales class, farms where the feed purchase ratio was between 20 and 30 percent had the highest average operating margins.

There was a strong statistical relationship between operating margin and feed purchases for the \$120,000-\$150,000 size class. The differences in average operating margin among the three feed/sales groups of less than 40 percent were consistent and important. Operating margins fell about 20 percent on average as purchased feed expense increased 10 percent relative to sales. Farms in this sales class that had feed costs of 40 percent or more of total milk sales also had high average outlays for most of the other expense categories and operating margins were quite variable.

In the \$150,000 to \$200,000 class, the positive effect of low feed purchase cost on operating margin was clear, with the margin averaging over \$90,000 when feed purchases were less than 20 percent of milk sales. The two groups with feed/milk sales ratios of 20 to 29 and 30 to 39 percent had similar average operating margins of about \$40,000. These farms planted more acres and spent more for fertilizer, seed, and chemicals but used less crops for feed than others of this size.

Table A-1--Performance of dairy farms by size class and region, FCRS 1987

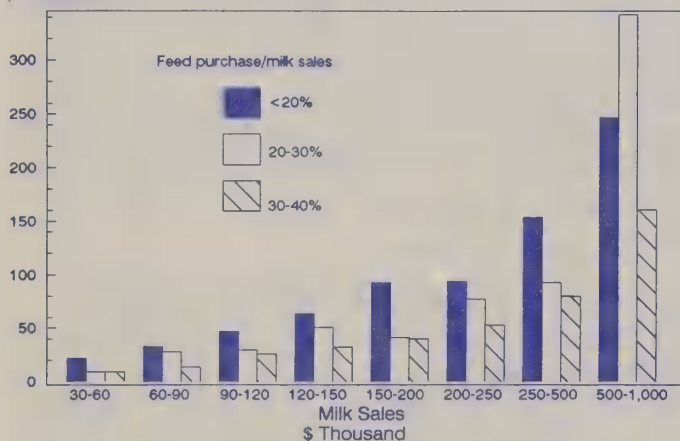
Milk sales per farm	U.S. Average	Lake States	Northeast	Northern Plains- Corn Belt	Southeast- Delta- Appalachia	Mountain- Southern Plains	Pacific
- - Operating margin ■■ percent of cash income - -							
Less than \$30,000	22	25	27	19	14	*	*
\$30,000-\$59,999	19	24	11	27	11	*	*
\$60,000-\$89,999	29	30	29	25	28	*	*
\$90,000-\$119,999	27	34	20	27	19	*	*
\$120,000-\$149,999	27	30	27	30	*	*	*
\$150,000-\$199,999	29	34	38	21	18	18	17
\$200,000-\$249,999	26	38	24	30	20	17	21
\$250,000-\$499,999	25	30	22	*	27	19	19
\$500,000-\$999,999	17	28	13	*	*	14	17
\$1,000,000 or more	20	*	*	*	16	16	25
All sizes	24	30	25	26	18	19	21

* = data insufficient for disclosure.

Figure A-3

Average Operating Margin of Selected Specialized Dairy Farms, 1987

\$ Thousand



Farms with milk sales of \$200,000 to \$250,000 in all regions continued to follow the pattern found for the smaller herd sizes with average operating margin falling 20 percent as purchased feed increased 10 percent relative to milk sales. There was a substantial difference in average farm assets for the farms of this size. Farms with the lowest feed purchases had assets valued over \$1 million, on average, compared to \$600,000 for those with feed purchases more than 40 percent of milk sales. This is as expected since more land and equipment are needed to grow crops. Many of the farms with high feed/milk sales ratios were located in the western half of the country.

Farms in the \$250,000 to \$500,000 class were also widely distributed across regions. The group with the smallest feed/sales ratio again showed the highest operating margins (\$154,000). They also had the most crop acres and highest crop-related expenses. The smallest operating margins on average (\$57,000) were associated with the farms with the highest feed/sales ratio.

About equal numbers of farms in the \$500,000 to \$1-million class were located in the eastern United States as were in the West. More of the farms of this size in the West depend on both purchased forage and concentrate feed. In this case, the largest operating margins (\$340,000) were achieved by those where feed/sales ratios ranged between 20 and 30 percent. The group of farms that had the smallest feed purchases also had debt levels and interest payments well above the average for this size class. Those farms with feed/sales ratios of 20 to 30 percent had substantially larger gross cash farm incomes, which may be a key determinant of their relative success.

Most of the farms with milk sales over \$1 million were in the Southeast-Delta-Appalachia and Pacific regions. More than half of the farms had feed purchases that exceeded 40 percent of milk sales. There were insufficient numbers in the other feed/milk sales categories to calculate a meaningful average for any one of the groups. In general, the farms with the largest feed purchases had lower operating margins than those who spent less than 40 percent of milk sales on feed. In most other respects, the pattern of expenditures were similar. There was substantial variation within the group of farms with high feed purchases in respect to acres planted to crops, amount of debt, and operating margin.

Conclusions

This analysis has shown that the size of a dairy farm has a direct bearing on the cash profitability of the operation. Regional variations were also found to occur within each size class. A major determinant of increased operating margins, however, was most often low amounts of purchased feed cost relative to milk sales.

The relationship between performance and feed purchases (table A-2) was quite consistent for farms with annual milk sales of \$30,000 to \$500,000. Operating margin fell as the feed purchases as a percent of milk sales grew. Clearly, the

resources available to dairy farm operators determine the appropriate combinations of home-grown and purchased feed. While there was wide variation in crop production within each region, dairy farms in the Corn Belt and Lake States planted more forage and feed grains. Production of forages and some feed grains appeared to be a worthwhile strategy on some dairy farms in 1987.

On larger farms, reliance on others to produce feed was much more common. Farms with \$500,000 to \$1 million milk sales had relatively high operating margins when feed purchases were less than 30 percent of sales.

Grouping dairy farms on the basis of the percentage which feed purchases were of milk sales yielded rather consistent results. For essentially all of the size classes with milk sales of \$30,000 to \$500,000, average operating margins were the highest when feed purchases amounted to less than 20 percent of milk sales. Even for the two largest size groups, those who maintained control over feed costs had the best operating results.

This report summarizes a more extensive analysis conducted by Stanton and Bertelsen. The larger study, titled *Operating Results for Dairy Farms Classified by Size, FCRS Data, United States, 1987*, AE Res 89-23, November 1989, is available from the Cornell University Department of Agricultural Economics, Ithaca, New York.

Table A-2--Performance of dairy farms by size class and feed purchases as percent of milk sales, FCRS 1987

Milk sales per farm	Feed purchases as percent of milk sales			
	< 20%	20-29%	30-39%	> 39%
Operating margin as percent of cash income				
Less than \$30,000	20	*	*	*
\$30,000-\$59,999	34	17	16	*
\$60,000-\$89,999	36	30	16	*
\$90,000-\$119,999	35	24	21	*
\$120,000-\$149,999	36	31	19	*
\$150,000-\$179,999	41	21	19	11
\$200,000-\$249,999	34	28	20	10
\$250,000-\$499,999	35	25	20	14
\$500,000-\$999,999	33	36	20	*
\$1,000,000 or more	*	*	*	15

* = data insufficient for disclosure.

Financial Characteristics of 1988 Drought-Damaged Farms

by
Gerald W. Whittaker³

Abstract: Nine States in the upper Midwest received 70 percent of Federal crop damage payments and 40 percent of the livestock feed disaster payments. Net farm income dropped in this region while rising in the rest of the country. However, farms in both the severe drought region and the rest of the country continued to improve their financial position. The number of farms with no debt increased in the drought region, and the number of farms experiencing financial distress decreased slightly. Higher prices allowed farmers in the drought area to take advantage of markets, and direct Government payments and CCC loans were both reduced in 1988 from 1987.

Keywords: Drought, farm finances, Farm Costs and Returns Survey

In the summer of 1988, major portions of the continental United States suffered the most severe and widespread drought in 50 years. The effects on agriculture were so great that Federal legislation was passed providing Government aid for farms which were seriously damaged by the drought. By the end of August 1989, \$3.4 billion had been dispersed to farms under the 1988 drought-relief program.

To evaluate the financial effects of the drought, average income, expense, debt, and other financial information were

estimated for commercial farms in an area using Farm Costs and Returns Survey (FCRS) data. Commercial farms are defined as those farms receiving at least \$40,000 in gross income. These farms were chosen because a drought affects their financial position more than a smaller farm which receives a large share of its income from off-farm activities. This ensures that financial effects of the drought are not being confused with other, non-agricultural factors.

Since the effects of the drought were unevenly distributed, individuals in some States suffered substantial drought losses, but the State as a whole received only a small amount of the total disaster payments. Average farm financial condi-

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tions in these States would provide little information about the effects of the drought. Therefore, a nine-State region in which all counties suffered large drought losses was chosen to represent drought damage. This drought region included Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, North Dakota, South Dakota, and Wisconsin (figure B-1). As classified by the Palmer Drought Severity Index⁴, almost every county in these States was considered to be undergoing a severe or extreme drought. These States received 70 percent of the total Federal crop damage disaster payments and 40 percent of the livestock feed disaster payments. The other States are referred to below as the nondrought region.

Net Farm Income

In 1988 net farm income increased nationally and in the nondrought area, but decreased in the drought area. The number of farms with positive income was less in both areas.

Average net farm income for all U.S. farms increased by \$350 from 1987 to \$21,300 in 1988. However, drought-area average net farm income dropped from \$22,886 in 1987 to \$18,003 in 1988 (table B-1). Farmers in the nondrought areas were able to take advantage of higher prices, and saw annual average net farm income rise \$2,278 to \$22,472 in 1988. Even though incomes were up in areas outside the 9 States, the percentage of profitable farms dropped slightly (from 78 to 77), probably as result of the nationwide effects of the drought. The drought area suffered a substantial decline in the number of profitable farms, from 79 percent down to 71 percent.

In the nondrought area, economic size class groups showed small random increases or decreases in the percentage of

profitable farms, but in the drought area all economic size groups showed a decrease.

The three major types of farms in the drought area are cash grain, livestock (beef, hogs, sheep), and dairy. All three showed a decline in profitability from 1987, with average net income dropping 29 percent for cash grain farms, 37 percent for livestock farms, and 6 percent for dairy farms. Dairy farms in the nondrought area also showed a decrease in net farm income, but cash grain and livestock farms showed an increase. Net farm income was higher in 1988 than 1986 in both the drought and nondrought regions for cash grain and livestock, but lower for dairy.

Net Cash Farm Income

Historically, the drought area has had a higher proportion of farms with positive net cash income than the nation as a whole. In 1988, the proportion of farms with positive net cash income dropped in both the drought and nondrought regions. However, the historical relationship held in 1988, even though the proportion with positive net cash income in the drought area dropped a bit more than in the nondrought region.

The fraction of farms with positive net cash income in the nondrought area dropped from 51 percent in 1987 to 49 percent in 1988. In the drought area, the fraction dropped from 69 percent to 64 percent. The proportion remained higher in 1988 than 1986 in the nondrought region, but was lower than both 1986 and 1987 in the drought region.

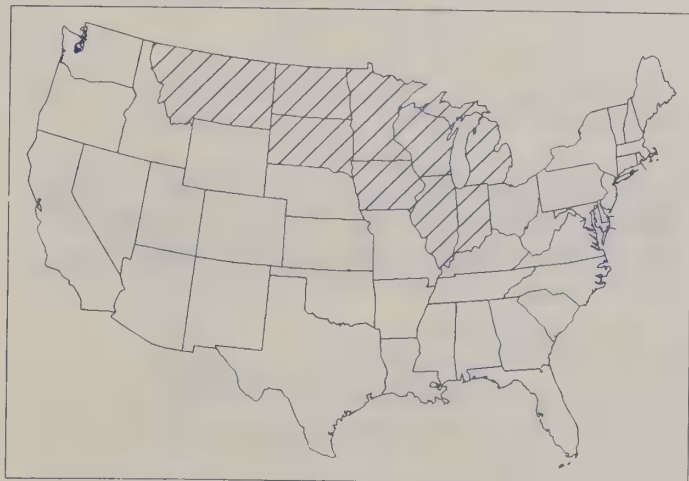
Commercial Farm Operator Financial Performance Patterns

In the nondrought area, vulnerable producers were slightly more leveraged. A vulnerable farm is defined here as one which has a high debt-asset ratio (above 0.40) and negative income. Overall, lower expenses were coupled with lower net incomes in the drought area, and the average expense-to-income ratios were identical in each group at 0.78.

In the nondrought area, vulnerable farms paid 19 cents of each dollar of gross income for interest on debt. Vulnerable farms in the drought area paid 15 percent of their gross income for debt interest. One of the most telling differences between the drought and nondrought regions lies in the return on current production for marginal solvency farms: 0.19 in the nondrought region compared to 0.09 in the drought region. The marginally solvent farms in the drought region had a much lower average net income (\$43,526) than farms in the same financial category in the nondrought area (\$78,526).

Figure B-1

Extreme Drought Region - 1988



⁴ This Index identifies relative dryness or wetness and indicates prolonged and abnormal moisture deficiency or excess. It indicated general conditions, not local variations caused by isolated rain.

Table B-1--Comparison of net farm income and net cash farm income by drought and nondrought areas

	1986	1987	1988	:	1986	1987	1988
	Drought Area			:	Nondrought Area		
	Net farm income			:	Net cash farm income		
All farms	12,885	22,886	18,003	:	19,004	22,730	17,930
Production specialty:				:			
Cash grain	11,567	24,530	17,387	:	20,879	24,881	17,208
Beef, hogs, sheep	13,554	23,554	14,787	:	15,434	21,122	12,933
Dairy	48,185	24,798	23,432	:	62,595	27,889	30,500
Sales class:				:			
\$500,000 or over	126,722	185,925	111,693	:	181,680	196,378	112,116
\$250,000 to \$499,999	47,038	83,116	59,060	:	80,759	96,186	76,231
\$100,000 to \$249,999	22,564	38,267	32,672	:	39,099	43,673	36,122
\$40,000 to \$99,999	11,548	21,919	13,133	:	18,223	22,180	14,158
\$20,000 to \$39,999	6,075	7,112	6,387	:	5,692	5,531	4,489
\$10,000 to \$19,999	1,723	6,637	5,476	:	-106	2,763	1,759
\$9,999 or less	949	3,842	3,253	:	-3,701	-1,946	-2,469
	Net farm income			:	Net cash farm income		
All farms	11,476	20,194	22,472	:	12,277	14,539	17,230
Production specialty:				:			
Cash grain	10,459	20,501	23,367	:	16,439	17,771	19,316
Beef, hogs, sheep	3,652	12,388	16,035	:	855	5,154	9,597
Dairy	25,730	41,287	35,704	:	33,005	37,960	36,522
Sales class:				:			
\$500,000 or over	147,208	297,828	463,298	:	250,951	318,800	482,042
\$250,000 to \$499,999	85,555	92,522	81,871	:	108,229	89,757	82,878
\$100,000 to \$249,999	25,852	46,835	46,504	:	36,318	45,775	43,889
\$40,000 to \$99,999	10,101	25,232	29,408	:	12,333	19,552	23,875
\$20,000 to \$39,999	7,796	14,266	7,341	:	5,281	8,620	4,537
\$10,000 to \$19,999	2,341	7,959	7,855	:	-1,215	947	927
\$9,999 or less	1,349	4,352	4,414	:	-4,303	-2,897	-2,495

Source: Farm Costs and Returns Surveys, USDA

Table B-2--Average financial characteristics by net farm income and debt/asset ratio position

	Favorable		Vulnerable		All farms	
	Nondrought	Drought	Nondrought	Drought	Nondrought	Drought
Percent of farms	62.15	68.00	7.86	5.21	100.00	100.00
	Dollars per farm					
Financial:						
Crop sales	44,789	78,385	46,087	65,769	45,711	78,565
Livestock sales	70,469	69,837	79,873	120,612	78,137	78,287
Other farm income	20,909	19,923	34,640	21,717	24,312	22,111
Gross cash farm income	132,229	170,049	144,975	203,567	141,707	179,708
Noncash adjustments	19,014	24,411	-763	6,849	13,582	21,586
Gross farm income	151,243	194,460	144,213	210,416	155,289	201,294
-Total expenses	101,520	127,029	179,029	271,519	125,074	153,984
=Net farm income	49,723	67,431	-34,816	-61,104	30,214	47,309
Nonfarm income	15,771	29,781	13,352	33,011	15,198	30,882
Farm assets	529,910	754,349	427,440	524,971	520,632	751,512
Farm operator debt	58,981	60,146	278,666	336,578	111,515	108,931
Commodity Credit Corporation crop loans	5,175	3,753	20,596	3,805	8,556	3,749
Net worth	470,930	694,203	148,775	188,393	409,117	642,581
	Ratio					
Ratios:						
Debt to asset	0.11	0.08	0.65	0.64	0.21	0.14
Return on assets	0.06	0.07	-0.07	-0.10	0.04	0.05
Operating expense/gross income	0.67	0.68	1.11	1.23	0.78	0.78
Interest/gross income	0.05	0.04	0.19	0.15	0.08	0.06

Source: 1988 Farm Costs and Returns Survey, USDA

Government Payments Lowered

Even with drought disaster payments, total direct Government payments declined from \$16.8 billion in 1987 to about \$14 billion in 1988. The proximate cause for the decline was higher commodity prices, which led to deficiency payments decreasing from \$11.5 billion in calendar 1987 to \$9.8 billion in 1988. In the nondrought area, average direct payments were reduced from \$24,506 per farm in 1987 to \$19,254. The average direct payment in the drought area changed much less, from \$25,231 in 1987 to \$21,773 in 1988.

The share of farms receiving direct Government payments in the drought area was 81.5 percent, compared with 53.9 percent in the nondrought area (table B-3). The difference is attributable to the concentration of cash grain and livestock farms in the drought area. Nationally, cash grain farms have a high rate of participation in Government programs. Ninety-seven percent of cash grain farms in the drought area and 94 percent in the nondrought area received direct payments. Of the grain-producing beef, hog, and sheep farms in the drought area, 81 percent received direct Government payments, but only 46 percent in the nondrought area.

For specialty farms in the drought region, average direct Government payments ranged from \$31,175 for wheat to \$11,040 for dairy farms. Government payments constitute the largest percentage of gross cash income for wheat and corn farms, as a result of the commodity programs. Wheat farms received the largest average payment, and this payment made up 28.7 percent of their average gross cash income. There is a similar pattern for average payment and

income share for corn farms, which receive 24.8 percent of their gross cash income from direct Government payments. Government payments constitute a much smaller share of gross cash income received by livestock operations. It averages 7.5 percent for beef farms, 8.0 percent for hog farms, and 5.8 percent for dairy farms.

The average farm in the drought region survived financially by taking advantage of higher commodity prices to redeem CCC loans and by drawing down inventories. The change in the value of CCC loans in 1988 was -\$6,453 for the drought region, and \$745 for the nondrought region. Price increases for wheat and corn above the loan rate led to market sales and CCC redemptions. The result was a drop of \$28,232 in the value of average CCC loans for wheat farms and \$15,388 for corn farms. Livestock operations also reduced the value of CCC loans: CCC loans changed -\$3,900 for beef farms, -\$6,141 for hog farms, and -\$1,981 for dairy farms.

Table B-3--Government payments: nondrought area, drought area, drought area specialty farms ^{1/}

	Average direct payments	Payments as percent of gross cash income	Change in value of CCC loans	Percent of farms receiving direct payments
Nondrought area	19,254	5.8	745	53.9
Drought area	21,773	12.5	-6,453	81.5
Wheat	31,175	28.7	-28,232	94.8
Corn	24,724	24.8	-15,388	92.9
Beef	22,610	7.5	-3,900	80.8
Hog	16,634	8.0	-6,141	80.2
Dairy	11,040	5.8	-1,981	69.0

^{1/} Specialty farms earn more than 50 percent of gross cash income from the special commodity. Source: 1988 Farm Costs and Returns Survey, USDA

Specialization in Farming—A 4-Year Synopsis

by
Robert Dubman⁵

Abstract: This report looks at the recent finances of various types of specialized farms. Farm revenues, costs, and debt positions are examined with 4 consecutive years of data from the Farm Costs and Returns Surveys. A comparison is also made to commercial-sized farms which did not specialize in any of the major commodities considered.

Keywords: Commercial farms, agricultural finance

This report looks at the recent finances of various types of specialized farms. Farms that have over 50 percent of their value of production in one commodity and more than \$40,000 in gross revenue are considered specialized farms. Because the focus is on specialized farming operations, the whole-farm results are similar to enterprise analyses based on costs and returns budgets. Farm revenues, costs, and debt positions are examined with 4 consecutive years of data from USDA's Farm Costs and Returns Surveys. An analysis over time mitigates some of the difficulties that business and weather cycles create for individual years. A comparison is also made to commercial-sized farms which did not specialize in any of the major commodities considered.

More than one-fourth of all commercial farms qualify as one of the 11 types of specialized farms listed in table C-1. These farms account for about 25 percent of the value of production of all commercial farms.

Specialized farms are those most indicative of the financial merits of producing a commodity because they often sell the bulk of that commodity and generally rely on income from that commodity for a substantial portion of their household's total income. Specialized farms concentrate resources in one

Table C-1--Returns of specialized farms, 4-year averages, 1985 to 1988

Farm type	Average net return	Highest return and year received	Average return to assets	Average return margin	Farms with negative returns
	Dollars per farm	Dollars (year)	Percent		
Soybeans	30,884	44,609 (1988)	7	25	18
Corn	26,874	42,468 (1988)	6	18	25
Dairy	23,240	26,945 (1988)	5	14	22
Wheat	23,376	29,146 (1988)	4	18	23
Hogs	24,701	36,376 (1987)	6	15	22
Cotton	33,166	57,372 (1987)	6	15	23
Cattle	16,663	19,019 (1988)	2	7	32
Rice	69,016	69,668 (1985)	12	28	25
Tobacco	31,492	41,684 (1988)	10	25	16
Peanuts	34,270	49,945 (1988)	7	17	24
Sorghum	31,075	65,447 (1988)	7	25	23
Other commercial	29,428	46,716 (1988)	5	16	24

Source: Farm Costs and Returns Surveys, 1985 to 1988.

Terms and Definitions

Commercial farms had \$40,000 or more in gross revenues in 1 year.

Specialized farms are commercial farms, producing a commodity, whose value of production accounts for 50 percent or more of the value of the farm's total crop production plus livestock commodity sales.

Gross revenue equals the sum of livestock commodity sales, the value of crop production (less that fed to livestock), direct Government payments, income from rental of farmland, and other cash farm-related income.

Net returns equal gross revenue less total expenses (or costs) for the farm business. This measure does not include farm operator household income and expenses or expenditures for capital items and depreciation. Thus, net returns equal residual returns to owned inputs and own labor and management before capital replacement.

Total expenses are all cash variable and fixed business expenses, except for capital consumption, but including share rental expenses, in-kind payments to hired workers, and purchased livestock.

Returns margin equals net returns divided by gross revenue. This measure provides an indicator of how effectively gross revenues are converted to net returns.

Returns/assets ratio equals the sum of net returns and interest expenses divided by the value of assets. This measure of performance represents the returns to assets, labor, and management before capital replacement.

Cost/returns ratio equals the sum of input costs divided by the value of production. Variations of this ratio include capital expenses in costs or Government direct payments in revenues.

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enterprise and, thus, may acquire economies in input purchases, production, and marketing. A major drawback of specialization is a lack of diversification which could place the entire farm at risk if the specialized commodity fails to produce adequate revenue.

Returns Are Improving

When viewed on an average over 4 years, net returns for specialized farms, with the exception of cattle and rice, were between \$23,000 and \$35,000 (table C-1). Returns to specialized cattle farms more than doubled between 1985 and 1988. In fact, the 1985-86 years were not very profitable for most farm types; most specialized farms had their best net returns in 1987 or 1988. An exception was specialized rice farms, where net returns have remained steadily high. This is best explained by high rice prices and the introduction of new varieties with increased yields.

Because average net returns are usually related to farm size, comparisons of net returns to gross revenues (the returns margin) or comparisons of net returns in relation to assets (the returns to assets ratio) are more general indicators of profitability. Both of these returns ratios have generally increased since 1985. For example, the returns margin for soybean farms increased from 9 percent in 1986 to 33 percent in 1988 and the returns to assets went from 3 percent to 9 percent. Other specialties followed a similar pattern.

All commercial farms (specialized or other) had roughly a 25-percent chance of having negative net returns in any year during 1985 to 1988. As a group, specialized farms were slightly more likely to have negative returns. Some specialties, such as soybeans and tobacco, had a lower probability of negative net returns while others, such as cattle, experienced a higher likelihood of negative net returns (table C-1).

Within specialties, the share of farms with negative net returns was lowest in either 1987 and 1988. For example, 25 percent of dairy farms had negative net returns in 1985 compared to 20 percent in 1988. This reflects the general increase in financial strength of all farms after 1986.

Loan Default Problems Declined Dramatically

A combination of debt burden and debt service ability provides information about the possibility of default on loans. The ratio of farm debt to farm assets shows the relative burden of debt in comparison to the asset base of the farm: low debt (less than 40 percent), high debt (above 40 and less than 70 percent), very high debt (above 70 and less than 100 percent) and insolvent (100 percent or above). Farms were classified as experiencing default problems if: debts exceeded assets (insolvent), debts were very high and only partial payment of scheduled principal and interest was made, or debts were high and no loan payments could be made from available farm and off-farm income (table C-2).

Table C-2--Measures of debt service strength for specialized farms, average on January 1 for years 1986 to 1989

Farm type	Debt	Net worth	Debt to assets	Farms with default problems
	Dollars per farm		Percent	
Soybeans	107,268	332,580	25	13
Corn	163,993	310,054	35	16
Dairy	123,500	390,173	24	12
Wheat	135,649	388,687	26	13
Hogs	123,466	304,775	29	12
Cotton	177,208	435,048	29	17
Cattle	134,388	635,275	16	9
Rice	146,825	446,439	24	19
Tobacco	49,474	273,911	15	8
Peanuts	123,310	342,776	26	16
Sorghum	85,583	311,264	20	16
Other commercial	140,120	462,145	23	13

Source: Farm Costs and Returns Surveys, 1985 to 1988.

Four-year average debt-to-asset ratios indicate a low debt burden for all commercial farms including specialized farms. More significant is that debt-to-asset ratios declined markedly between 1985 and 1988. For example, the debt-to-asset ratio dropped from 34 percent to 19 percent for soybeans, from 41 to 27 percent for hogs, and from 32 to 25 percent for cotton. The debt-to-asset ratio for the other commercial farms dropped about 10 points. A major force in declining debt-to-asset ratios is the increase in land values since 1986.

Five of the specialized farm types had a higher proportion of default problems than the nonspecialized (other commercial) farms (table C-2). This suggests that specialization does not coincide with lower levels of risk. Moreover, the returns to specialized farms generally do not appear higher than for the other commercial farms (table C-1).

Coinciding with the improved debt positions, fewer farms faced default problems in 1988 than in 1985. The highest year for default problems was 1986. The proportion of farms with default problems declined between 1986 and 1988 from 21 to 13 percent for corn, from 23 to 14 percent for rice, and from 26 to 11 percent for cotton. An exception is wheat which, especially in the Northern Plains region, was severely affected by the drought in 1988; consequently, the proportion of specialized wheat farmers with default problems increased from 11 percent in 1985 to 16 percent in 1988. The high net worth of cattle farms tended to limit their default problems despite low returns.

Costs Are Less Than Revenues

Viewing farm finances through only production expenses can be deceptive if returns are changing. An alternative way to examine farm cost structure is to calculate a ratio of input costs to the total value of production. Cost/returns ratios will differ with enterprise mix, production practices, and efficiency levels. Because the ratios apply to all crops and livestock produced, they include more than the costs per dollar or per unit of the specialized commodity produced; the ratios are whole-farm oriented rather than enterprise ori-

Table C-3--Four-year average cost/returns ratios for specialized farms, 1985 to 1988

	Cost/returns ratio			Farms receiving payments
	Capital expenses		All costs 1/ plus payments	
	Exclude	Include		
Soybeans	85	95	81	88
Corn	90	99	85	91
Dairy	87	95	92	47
Wheat	107	120	89	96
Hogs	90	98	91	75
Cotton	106	116	95	97
Cattle	106	112	105	58
Rice	92	101	81	95
Tobacco	84	89	86	54
Peanuts	91	97	91	81
Sorghum	86	93	75	86
Other commercial	91	98	93	60

1/ All costs, including capital expenditures, divided by the sum of the value of production and direct Government payments.
Source: Farm Costs and Returns Surveys, 1985 to 1988.

ented. Table C-3 presents the cost structure of specialized farms with cost/return ratios.

Revenues did not always cover costs even with the exclusion of capital expenses. Wheat, cotton, cattle, and rice farms had average cost/returns ratios above one for the four-year period. Following the improvement in other indicators, the cost/returns ratios have decreased. For example, the cost (including capital expenses) per dollar of production (including Government payments) on tobacco farms decreased from \$.85 in 1985 to \$.80 in 1988. For corn, it decreased from \$.86 to \$.82, and for wheat from \$.97 to \$.88. The trend

(excluding direct Government payments) was not uniform. Some commodities, such as soybeans, had their lowest cost/returns ratios in 1987.

Commodities with higher participation rates in Government programs had bigger decreases in the cost/return ratios after direct Government payments were added to returns (table C-3). The direct payments may be for crops other than the specialty. Thus, soybean farmers may receive payments for corn that is grown on the ~~same~~ farm. All commodities except cattle had cost/return ratios less than one after inclusion of direct payments.

Following an almost universal trend, larger farms had better financial health than small farms. In virtually all specialties, farms with \$40,000 to \$100,000 in gross revenues had both debt repayment problems and cost/return ratios above one. Net returns, returns to assets, and the returns margin of small specialized farms were also lower than their larger counterparts.

Perhaps the clearest conclusion to be drawn from this analysis is that, when viewed over the 4-year period, specialized farming appears more financially sound at the close of 1988 than in the mid-1980's. Levels of net returns, debt repayment problems, and costs for specialized farms are comparable to other commercial-sized farms. Those farms that survived the depressed years of 1985-86 have recovered and, on average, were financially stronger in 1988.

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Appendix table 1--Farm income, assets and debt, and returns 1/

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Income and total returns						
1. Gross farm income 2/	n/a	n/a	163	158	181	177 to 181
2. Wages and perquisites to hired labor	n/a	n/a	10	10	10	9 to 11
3. Other operating expenses, excluding interest	n/a	n/a	73	80	90	86 to 90
4. Capital consumption	n/a	n/a	14	15	14	14 to 15
5. Net income from assets and operators' labor and management (1-2-3-4)	n/a	n/a	65	64	68	65 to 69
6. Income imputed to operators' labor and management	n/a	n/a	27	28	29	27 to 31
7. Residual income to assets (5-6)	n/a	n/a	38	35	39	36 to 40
8. Real capital gain to assets	n/a	n/a	52	24	10	0 to 6
9. Total return from assets (7+8)	n/a	n/a	90	59	49	36 to 42
10. Interest paid	n/a	n/a	15	15	15	13 to 15
11. Real capital gain to debt	n/a	n/a	7	5	6	5 to 7
12. Total return to equity (9-10+11)	n/a	n/a	82	50	40	30 to 34
13. Real capital gain to assets and debt (8+11)	n/a	n/a	59	29	16	7 to 11
14. Residual income to equity (12-13)	n/a	n/a	23	21	24	21 to 25
Balance sheet 3/						
15. Assets	n/a	n/a	765	810	849	880 to 890
16. Debt	n/a	n/a	143	138	136	134 to 140
17. Equity (15-16)	n/a	n/a	622	672	713	740 to 750
Percent						
Rates of return and interest rates						
18. Rate of return on assets (ROA) (7/15)	n/a	n/a	5.2	4.5	4.7	4 to 5
19. Real capital gain on assets (8/15)	n/a	n/a	7.1	3.0	1.2	0 to 1
20. Total real return on assets (18+19)	n/a	n/a	12.3	7.5	5.9	4 to 5
21. Av. interest rate paid on debt (10/16)	n/a	n/a	10.0	10.4	10.6	10 to 12
22. Real capital gains on debt (11/16)	n/a	n/a	4.8	3.8	4.5	4 to 5
23. Real cost of debt (21-22)	n/a	n/a	5.2	6.6	6.1	6 to 8
24. Rate of return on equity (ROE) ((7-10)/17)	n/a	n/a	4.0	3.2	3.5	3 to 4
25. Real capital gain on equity ((8+11)/17)	n/a	n/a	10.2	4.5	2.3	1 to 2
26. Total real return on equity (24+25)	n/a	n/a	14.2	7.7	5.8	4 to 5
27. Net return on assets (NROA) (18-21)	n/a	n/a	-4.8	-5.9	-5.9	-6 to -7
28. Spread (20-23) 4/	n/a	n/a	7.1	1.0	-.2	-1 to -2

F = Forecast. 1985-1986 estimates currently under revision. 1/ Numbers may not add due to rounding. 2/ Excludes operator dwellings. 3/ Excludes operator households and CCC activity. 4/ When total real rate of return on assets exceeds total real cost of debt, debt financing is profitable.

Appendix table 2--Farm income and cash flow statement, 1985-90

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Farm income sources:						
1. Cash receipts	144.1	135.5	139.5	151.4	158	160 to 163
Crops 1/	74.3	64.0	63.8	72.6	75	77 to 80
Livestock	69.8	71.5	75.7	78.9	83	80 to 83
2. Direct Government payments	7.7	11.8	16.7	14.5	11	8 to 11
Cash Government payments	7.6	8.1	6.6	7.1	10	7 to 9
Value of PIK commodities	.1	3.7	10.1	7.4	1	1 to 2
3. Farm-related income 2/	5.0	5.1	5.8	5.7	6	5 to 7
4. Gross cash income (1+2+3) 3/	156.9	152.5	162.0	171.6	174	173 to 178
5. Nonmoney income 4/	11.8	10.6	10.0	10.3	10	9 to 11
6. Realized gross income (4+5)	168.7	163.1	172.0	181.9	185	182 to 190
7. Value of inventory change	-2.4	-2.7	-.4	-4.3	5	1 to 3
8. Total gross income (6+7)	166.4	160.4	171.6	177.6	190	185 to 190
Production expenses:						
9. Cash expenses 5/ 6/	110.2	100.7	107.5	114.4	121	119 to 122
10. Total expenses	134.0	122.4	128.0	135.0	141	139 to 142
Income statement:						
11. Net cash income: 1/ 6/						
Nominal (4-9)	46.7	51.8	54.5	57.2	53	52 to 57
Deflated (1982\$) 7/	42.1	45.5	46.4	47.2	42	40 to 45
12. Net farm income: 1/						
Nominal total net (8-10)	32.4	38.0	43.6	42.7	48	44 to 49
Deflated (1982\$) 7/	29.2	33.4	37.2	35.2	38	34 to 38
13. Off-farm income	42.6	44.6	46.8	51.7	54	55 to 59
Other sources and uses of funds:						
14. Change in loans outstanding 6/	-15.6	-20.0	-12.0	-4.7	-2	0 to 3
Real estate	-6.0	-9.0	-7.5	-4.4	-2	0 to 3
Nonreal estate 8/	-9.6	-11.0	-4.6	-.3	0	-1 to 1
15. Rental income and monetary change	8.8	7.8	6.8	8.5	8	7 to 9
16. Gross cash flow (11+14+15)	39.9	39.6	49.2	61.0	59	58 to 70
17. Capital expenditures 6/	9.2	8.5	9.8	10.2	11	11 to 13
18. Net cash flow (16-17) 1/ 6/	30.7	31.2	39.4	50.8	48	50 to 58

F = Forecast. Totals may not add due to rounding. 1987 and 1988 expenses include preliminary revisions from the recently-published 1987 Census of Agriculture. 1/ Includes net CCC loans. 2/ Income from custom work, machine hire, farm recreational activities, forest product sales, and misc. sources. 3/ Numbers in parentheses indicate components required to calculate a given item. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Excludes depreciation and hired labor perquisites. 6/ Excludes farm households. 7/ Deflated by the GNP implicit price deflator. 8/ Excludes CCC loans.

Appendix table 3--Relationship of net cash to net farm income

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Gross cash income	156.9	152.5	162.0	171.6	174	173 to 178
Minus: Cash expenses	110.2	100.7	107.5	114.4	121	119 to 122
Equals: Net cash income	46.7	51.8	54.5	57.2	53	52 to 57
Plus: Nonmoney income:						
Gross rental value of dwelling	10.9	9.7	9.2	9.3	9	8 to 10
Value of home consumption	.9	.9	.8	1.0	1	0 to 1
Value of inventory change	-2.4	-2.7	-.4	-4.3	5	1 to 3
Minus: Noncash expenses:						
Depreciation & capital consumption	20.8	18.9	17.7	17.7	18	17 to 19
Labor perquisites	.5	.4	.5	.5	1	0 to 1
Minus: Household expenses 1/	2.4	2.4	2.2	2.3	2	2 to 3
Equals: Net farm income	32.4	38.0	43.6	42.7	48	44 to 49

F = Forecast. Totals do not add due to rounding. 1987 and 1988 expenses include preliminary revisions from the recently-published 1987 Census of Agriculture. 1/ Includes expenses related to operator dwelling.

Appendix table 4--Cash receipts, 1985-90

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Crop receipts: 1/						
Food grains	9.0	5.6	5.6	7.7	8	8 to 11
Wheat	7.9	4.9	5.0	6.4	7	7 to 10
Rice	1.0	.7	.6	1.2	1	1 to 2
Feed grains and hay	22.5	17.2	13.1	15.3	17	18 to 21
Corn	16.9	12.6	8.5	10.1	11	12 to 14
Sorghum, barley, and oats	3.3	2.4	2.1	2.3	3	2 to 4
Hay (all)	2.3	2.2	2.5	2.9	4	3 to 5
Oil crops	12.5	10.6	11.2	13.7	12	10 to 12
Soybeans	11.2	9.2	9.9	12.4	11	9 to 11
Peanuts	1.0	1.1	1.0	1.1	1	1 to 2
Cotton lint and seed	3.7	3.6	4.1	4.7	5	4 to 7
Tobacco	2.7	1.9	1.8	2.0	3	1 to 3
Fruits and nuts	6.8	7.2	8.3	8.9	9	8 to 10
Vegetables	8.6	8.8	9.7	9.8	11	9 to 12
Greenhouse & nursery	5.4	5.9	6.6	6.9	7	6 to 8
Other crops 1/	3.2	3.3	3.8	3.7	4	3 to 5
TOTAL CROPS	74.3	64.0	63.8	72.6	75	77 to 80
Livestock receipts:						
Red meats	38.6	39.1	44.3	46.0	47	46 to 49
Cattle	27.0	26.9	31.0	33.3	34	33 to 36
Calves	2.1	2.0	2.4	3.0	3	2 to 4
Hogs	9.0	9.7	10.3	9.2	9	9 to 11
Sheep and lambs	.5	.5	.5	.5	.6	0 to 1
Poultry and eggs	11.2	12.7	11.5	12.9	14	13 to 15
Broilers	5.7	6.8	6.2	7.4	8	7 to 9
Turkeys	1.8	2.0	1.7	2.0	2	1 to 3
Eggs	3.3	3.5	3.2	3.1	4	2 to 4
Other poultry	.5	.4	.4	.4	*	0 to 1
Dairy products	18.1	17.8	17.7	17.7	19	16 to 20
Wholesale milk 2/	17.8	17.5	17.5	17.4	19	16 to 20
Other livestock	1.9	1.9	2.2	2.3	2	1 to 3
TOTAL LIVESTOCK	69.8	71.5	75.7	78.9	83	80 to 83
TOTAL RECEIPTS	144.1	135.5	139.5	151.4	158	160 to 163
Program 3/	67.6	54.5	50.9	60.5	60	60 to 65
Non-program 4/	76.6	80.8	88.3	90.9	98	96 to 100

F = Forecast. * = Less than \$500 million. Totals may not add due to rounding. 1/ Includes sugar, seed, and other misc. crops. 2/ Milk receipts do not reflect price deductions levied on marketings. 3/ Receipts from commodities directly supported by farm programs. 4/ Commodities not receiving direct support.

Appendix table 5--Farm income distribution by enterprise type (not revised from last issue) 1/

Item	Crops					Livestock		
	Total crops	Cash grain 2/	Tobacco	Cotton	Fruit, nut, vegetables	Total livestock	Red meat	Dairy
Thousands								
Number of farms								
1988	798	400	103	24	86	1,360	1,093	190
1989F	791	397	102	24	85	1,347	1,083	189
Income								
1. Cash receipts:	Million dollars							
Crops								
1988	65,720	29,970	2,140	4,290	16,330	6,840	5,340	1,000
1989F	70,400	32,600	2,600	4,500	16,700	7,400	5,700	1,100
Livestock								
1988	3,690	2,920	140	100	70	74,900	40,310	19,190
1989F	4,000	2,900	140	100	70	76,700	40,600	20,000
2. Direct Gov't payments:								
1988	9,480	7,500	100	900	110	5,020	3,730	1,100
1989F	7,100	5,600	20	700	80	3,700	2,800	800
3. Gross cash income: 3/								
1988	81,400	41,770	2,430	5,430	16,630	90,230	51,310	21,780
1989F	83,700	42,500	2,900	5,400	17,000	91,300	51,000	22,400
4. Cash expenses:								
1988	46,340	23,710	1,850	3,160	6,030	65,340	40,960	19,760
1989F	49,500	25,300	2,000	3,400	6,400	69,800	43,800	21,100
5. Net cash income:								
Current dollars 4/								
1988	35,060	18,060	580	2,280	10,600	24,880	10,340	2,020
1989F	34,200	17,200	900	2,000	10,500	21,500	7,300	1,300
Deflated (1982 \$)								
1988	28,810	14,840	480	1,870	8,710	20,450	8,500	1,660
1989F	26,900	13,500	700	1,600	8,300	16,900	5,700	1,000
Balance Sheet								
6. Farm assets:								
Real estate								
1988	214,400	99,200	11,900	7,500	40,700	336,600	257,700	55,000
1989F	230,300	107,000	13,000	8,000	44,000	362,000	277,000	59,000
Nonreal estate								
1988	76,000	44,120	3,700	4,300	7,400	124,000	82,600	30,200
1989F	76,000	44,000	3,600	4,300	7,400	123,000	82,000	30,000
7. Total liabilities:								
1988	63,100	37,800	1,700	3,200	6,300	74,900	47,300	22,600
1989F	63,000	38,000	1,700	3,300	6,300	75,000	47,000	22,600
8. Debt-to-asset ratio:	Percent							
1988	22	26	11	27	13	16	14	26
1989F	21	25	10	26	12	15	13	25

F = Forecast. Numbers may not add due to rounding. 1/ Farm types are defined as those with 50 percent or more of all sales accounted for by a specific commodity or commodity group. 2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains. 3/ Equals 1 + 2 + farm related income. 4/ Equals 3 - 4.

Appendix table 6--Farm production expenses, 1985-90

Item	:	1985	1986	1987	1988	1989F	1990F
	:	Billion dollars					
Farm-origin inputs	:	30.3	28.9	33.8	38.4	41	36 to 40
Feed	:	18.0	16.2	18.9	22.5	24	18 to 22
Livestock	:	9.0	9.7	11.8	12.8	13	12 to 15
Seed	:	3.4	3.0	3.0	3.1	4	3 to 5
Manufactured inputs	:	21.0	17.0	18.2	19.4	22	21 to 25
Fertilizer	:	7.3	5.8	6.2	7.0	8	7 to 9
Fuels and oils	:	6.6	4.8	5.0	5.1	6	5 to 7
Electricity	:	2.2	1.9	2.4	2.6	3	2 to 3
Pesticides	:	5.0	4.5	4.6	4.7	5	5 to 6
Total interest charges	:	18.7	16.9	15.5	15.2	15	14 to 16
Short-term interest	:	8.8	7.8	7.3	7.3	8	7 to 9
Real estate interest	:	9.9	9.1	8.2	7.9	7	6 to 8
Other operating expenses	:	30.7	29.8	31.5	32.3	34	33 to 37
Repair and maintenance	:	6.4	6.4	6.5	6.9	7	7 to 8
Labor expenses	:	9.8	9.9	10.8	11.2	11	11 to 12
Machine hire & custom work	:	2.2	1.8	2.0	2.2	2	2 to 3
Animal health	:	1.2	1.2	1.2	1.2	1	1 to 2
Marketing, storage & transportation	:	4.1	3.7	3.8	3.3	4	4 to 5
Miscellaneous operating expenses	:	6.8	6.3	6.8	7.5	8	7 to 9
Other overhead expenses	:	33.2	29.8	29.1	29.6	30	30 to 33
Capital consumption	:	20.8	18.9	17.7	17.7	18	17 to 19
Taxes	:	4.2	4.1	4.3	4.4	4	4 to 5
Net rent to nonoperating landlords	:	8.2	6.7	7.1	7.5	8	8 to 9
TOTAL PRODUCTION EXPENSES	:	134.0	122.4	128.0	135.0	141	139 to 142
Cash expenses 1/	:	110.2	100.7	107.5	114.4	121	119 to 122

F = Forecast. 1987 and 1988 expenses include preliminary revisions from the recently-published 1987 Census of Agriculture. 1/ Cash expenses equal total expenses minus depreciation, operator dwelling expenses, and noncash labor benefits.

Appendix table 7a--Balance sheet of the farming sector, excluding operator households, December 31

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Farm assets	n/a	n/a	764.9	810.4	849	830 to 890
Real estate 1/	n/a	n/a	577.0	607.9	648	675 to 685
Livestock and poultry	n/a	n/a	57.9	65.7	67	66 to 70
Machinery and motor vehicles	n/a	n/a	73.9	74.7	76	75 to 79
Crops stored 2/	n/a	n/a	20.9	26.2	22	19 to 23
Financial assets 3/	n/a	n/a	35.2	35.9	36	36 to 38
Farm debt	n/a	n/a	143.1	138.4	136	134 to 140
Real estate 4/	n/a	n/a	81.1	76.7	75	74 to 78
Nonreal estate	n/a	n/a	62.0	61.7	61	59 to 63
Total farm equity	n/a	n/a	621.8	672.0	713	740 to 750
Percent						
Selected ratios:						
Debt-to-asset	n/a	n/a	18.7	17.1	16	15 to 16
Debt-to-equity	n/a	n/a	23.0	20.6	19	18 to 19
Debt-to-net cash income	n/a	n/a	248.1	231.1	256	240 to 250

F = Forecast. 1985-1986 estimates currently under revision. 1/ Excludes value of operator dwellings. 2/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 3/ Excludes time deposits and savings bonds. 4/ Includes CCC storage and drying loans.

Appendix table 7b--Balance sheet of the farming sector, including operator households, December 31

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Farm assets	n/a	n/a	873.7	927.9	973	1,010 to 1,020
Real estate	n/a	n/a	626.3	659.4	703	735 to 745
Livestock and poultry	n/a	n/a	57.9	65.7	67	66 to 70
Machinery and motor vehicles	n/a	n/a	78.6	79.3	81	80 to 84
Crops 1/	n/a	n/a	20.9	26.2	22	19 to 23
Household goods	n/a	n/a	32.9	38.8	41	41 to 45
Financial assets	n/a	n/a	56.7	58.5	59	59 to 63
Farm debt	n/a	n/a	153.7	148.5	146	144 to 150
Real estate 2/	n/a	n/a	87.7	83.0	81	80 to 84
Nonreal estate	n/a	n/a	66.0	65.6	65	63 to 67
Total farm equity	n/a	n/a	719.6	779.4	827	860 to 870
Percent						
Selected ratios:						
Debt-to-asset	n/a	n/a	17.6	16.0	15	14 to 15
Debt-to-equity	n/a	n/a	21.4	19.1	18	16 to 18
Debt-to-net cash income	n/a	n/a	266.4	247.9	275	260 to 270

F = Forecast. 1985-1986 estimates currently under revision. 1/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 2/ Includes CCC storage and drying loans.

Appendix table 8--Farm financial ratios: liquidity, solvency, profitability, and financial efficiency

Farm financial ratios*	1982	1983	1984	1985	1986	1987	1988	1989F	1990F
Liquidity ratios:									
Household debt service coverage 1/	n/a	n/a	n/a	n/a	n/a	4.82	5.30	5.1	5.3 to 5.4
Farm business debt service coverage 2/	n/a	n/a	n/a	n/a	n/a	2.99	3.19	2.9	3.0 to 3.1
Debt servicing 3/	n/a	n/a	n/a	n/a	n/a	.15	.14	.1	.1 to .2
Times interest earned ratio 4/	n/a	n/a	n/a	n/a	n/a	4.32	4.30	4.5	4.4 to 4.6
Solvency ratios:									
Debt/asset 5/	n/a	n/a	n/a	n/a	n/a	18.7	17.1	16.0	15 to 16
Debt/equity 6/	n/a	n/a	n/a	n/a	n/a	23.0	20.6	19.1	18 to 19
Profitability ratios:									
Return on equity 7/	n/a	n/a	n/a	n/a	n/a	4.0	3.2	3.5	3 to 4
Return on assets 8/	n/a	n/a	n/a	n/a	n/a	5.2	4.5	4.7	4 to 5
Net farm to gross cash farm income 9/	n/a	n/a	n/a	n/a	n/a	29.1	26.6	28.2	26 to 28
Financial efficiency ratios:									
Gross ratio 10/	n/a	n/a	n/a	n/a	n/a	64.4	65.1	64.4	62 to 64
Interest to gross cash farm income 11/	n/a	n/a	n/a	n/a	n/a	9.2	8.5	8.4	8 to 9
Asset turnover 12/	n/a	n/a	n/a	n/a	n/a	22.3	21.8	21.0	19 to 21
Net cash farm income to debt ratio 13/	n/a	n/a	n/a	n/a	n/a	48.7	52.9	49.1	51 to 53
Financial leverage index 14/									
	n/a	n/a	n/a	n/a	n/a	.77	.72	.8	.7 to .8

F= Forecast. 1982-1986 estimates currently under revision. 1/ Assesses the ability of farm sector households to repay both principal and interest. 2/ Assesses the ability of farm businesses to repay both principal and interest. 3/ Indicates the proportion of gross cash farm income needed to service debt. 4/ Shows the farm sector's ability to service debt out of net income. 5/ Shows the proportion of all assets that are financed with debt. 6/ Measures the relative proportion of funds provided by creditors(debt) and owners(equity). 7/ Measures the ability of farm sector management to realize an adequate return on the capital invested by the owner(s). 8/ Measures how efficiently managers use farm assets. 9/ The profit margin indicates profits earned per dollar of gross income. 10/ Gives the portion of gross cash farm income absorbed by production expenses (claims on farm businesses). 11/ Gives the proportion of gross cash farm income committed to interest payments. 12/ Measures the gross farm income generated per dollar of farm business assets. 13/ Indicates the burden placed on net cash farm income to retire outstanding debt. 14/ Indicates whether or not the use of financial leverage is beneficial.

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